MC0342

Capital Investment Manual

Business Case Guide

NHS
Executive

This booklet is part of the *Capital Investment Manual.* The essential principles set out in this guide apply equally to investments in buildings, machinery and information technology, including those that involve use of private finance. It describes how to undertake each of the steps involved in developing a business case for a capital investment proposal, and is designed for use by business planners and other managers involved in the preparation of a business case.

The *Capital Investment Manual* comprises the following booklets:

Overview

Project Organisation

Private Finance Guide

Business Case Guide

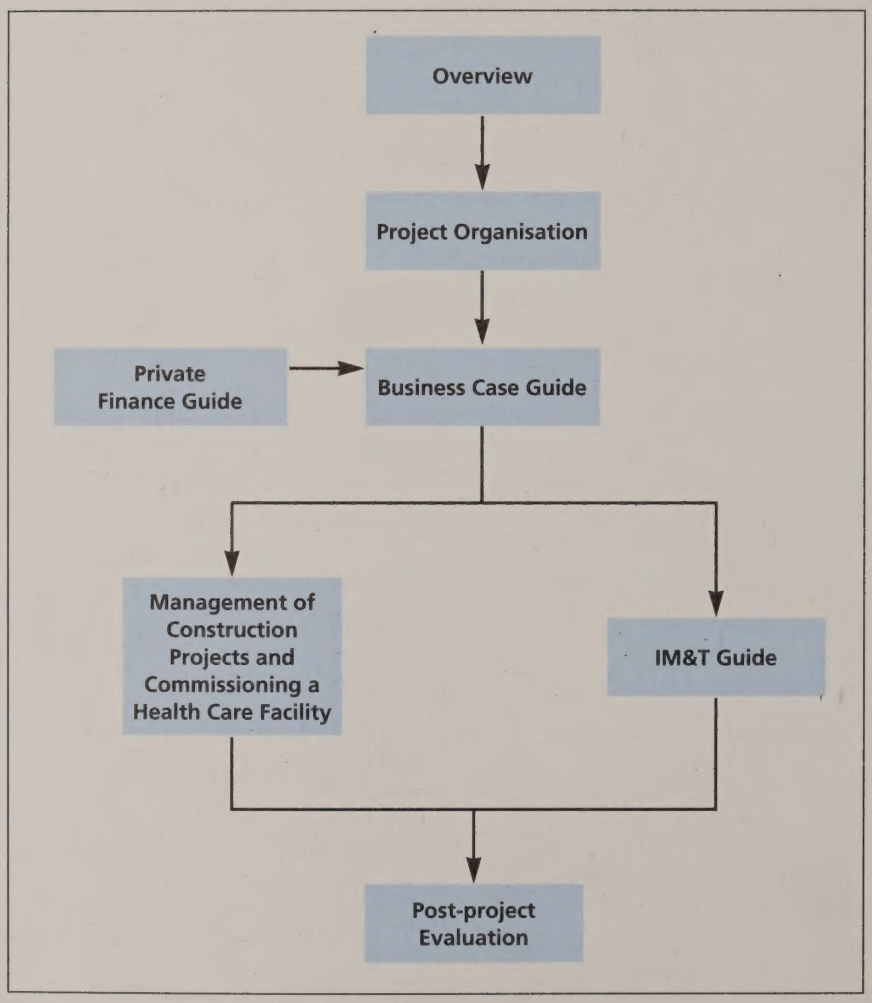
Management of Construction Projects

Commissioning a Health Care Facility

IM&T Guidance

Post-project Evaluation

Copies are available at all HMSO Bookshops.



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Introductory

Foreword

The preparation of a business case is the process that supports National Health Service (NHS) Trust submissions for the funding of new capital projects. Although use of the term *business case* to describe the document that supports a proposal for capital investment in the NHS is new, much of what it entails is not a new concept. Underlying the presentation of a business case is the sound framework for option appraisal that has been required in the NHS for some time.

This new guide highlights the same structured and disciplined approach to option appraisal which was previously set out in *Option Appraisal: A Guide for the National Health Service*, and *Investment Appraisal and Benefits Realisation for IM&T*. The process described in this guide reflects the important reforms that have taken place in the NHS following the NHS and Community Care Act (1990). However, the guidance is equally applicable to Directly Managed Units. It aims not only to give practical guidance on the technical considerations of the full capital investment appraisal process, but also to provide a framework for establishing management arrangements to ensure that the benefits of every capital investment are identified, evaluated and realised.

The executive summary which follows this foreword provides an overview of the business case process.

The subsequent chapters describe the process in full. Each chapter has a checklist summarising the key points and expected outputs.

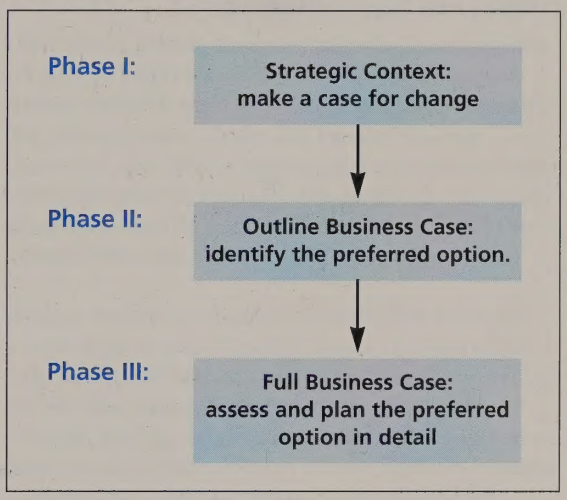
The general principles governing the production of a Full Business Case are outlined in this guide. More detailed, asset-specific guidance is given in *Management of Construction Projects* and the *IM&T Guidance*, for construction and Information Management and Technology (IM&T) schemes respectively.

Previous guidance has tended to be interpreted in too narrow a context of securing approval for the construction of a new building, or the procurement of an IM&T system. This new guidance needs to be understood within the wider framework of delivering a health care facility which supports Health Service objectives.

The focus is on the provider perspective on capital investment decisions, because Trusts have primary responsibility for evaluating and implementing investment schemes. It does of course apply equally to any other NHS entity undertaking a major capital investment. Equally, it is essential to gain purchaser support to any proposed investment and its implications for services, quality and prices. Purchasers must, therefore, be involved throughout the evaluation process, confirming the acceptability and affordability of capital expenditure.

This new guide describes a process which is intended to minimise abortive effort in bringing capital projects forward for approval. It introduces a three-phase approach to capital investment appraisal for the NHS, involving the establishment of a capital investment strategy, and the production of Outline and Full Business Cases. See Figure 1.

FIGURE 1: THREE PHASES



In the past, Phases II and III of the process have been components of the preparation of an Approval In Principle (AIP) proposal. The result has often been a long, involved and costly exercise. The aim of presenting the business case in two phases, first in outline and then in full, is to minimise abortive work. The objective is that, by the conclusion of Phase II, the validity or otherwise of the planned investment is evident and a preferred option is identified with a reasonable degree of certainty.

If the Outline Business Case (Phase II) clearly indicates that there is an optimum preferred option that offers best value for money, and capital funds are readily available, then the Trust may proceed rapidly to Phase III and develop the scheme in detail. If funds are not available for several years or the preferred option is unclear, then, at a later date, Phase III will involve a more rigorous reappraisal of the Outline Business Case.

It is important to note that the appraisal of, and planning for, capital expenditure should not be

viewed as necessary only at the inception of a scheme. The process should be a continuous one. In particular it will be important to review the market analysis and the affordability of the scheme at each stage of its development. It is hoped that this new phased approach will reinforce the impact of the NHS reforms and end bidding by providers for unrealistic capital schemes, bringing the demand for NHS capital more into equilibrium with its supply.

Further Information

Further information and guidance on investment appraisal are provided by HM Treasury in the following publications:

Economic Appraisal in Central Government: A Technical Guide for Government Departments (The Green Book), HMSO, 1991.

The Economic Appraisal of Property Options: A Manual of Procedures and Techniques, PSE Division, 1991.

The following publication is also available: *Procurement of Information Systems Effectively (POISE)*, NHS Supplies Authority.

Introduction

Capital Spending Solutions

The objectives of, and constraints on, capital expenditure should be clearly understood at the outset. The affordability of capital expenditure may influence the possible range of investment options it is reasonable for a Trust to consider. Since solutions that involve capital spending will introduce new capital charges with a long-term effect on NHS Trust finances and prices, the first consideration of Trust managers should be the effect capital expenditure will have on the financial position of the Trust. The cost of any investment to the Trust will be reflected in its prices and the investment must therefore be supported by purchasers who are both willing and able to pay for any price increases. In order to demonstrate that any given investment is affordable, its potential impact on the Trust's business plan must be assessed.

The full range of options needs to be considered, from minimum change, non-capital-intensive solutions, upgrade/change-in-use options and private finance alternatives to purely publicly funded schemes. It is essential to consider the total implications of any investment and not just its impact on the Trust's facilities, equipment or information systems.

Where capital spending is the optimum solution, attention needs to be given to options that offset increased capital charges by releasing savings from land sales or reducing running costs. This can present opportunities to improve estate utilisation and also, through rationalisation, to reduce backlog maintenance.

Because the impact of capital investment is by nature long-term it usually involves risk. Consequently, throughout the business case process, NHS Trust managers will need to identify risks and consider strategies for managing them. These include not only risks that could arise to jeopardise the completion of the project according to plan, but also those that could result in the benefits of the investment not being obtained. For example, in implementing a health care building scheme, significant risk is associated with potential changes in the methods of delivering care which might render the scheme unnecessary or unsuitable to meet the new demands facing the Trust. Similarly IM&T investments can be affected significantly by advances in technology which may render a new investment obsolete.

In this context the importance of flexibility when planning and implementing an investment must be emphasised. Options which are inherently flexible and can provide solutions under different scenarios of service demand are likely to be the most attractive in the long term. It is imperative to anticipate as far as possible the possible direction of change and to consider the ways in which this can be managed effectively. A good understanding of the pressures for change will help to anticipate changes that are becoming apparent from current trends and policies.

Solutions Using Private Sector Capital

The use of private finance can help to capture the skills and expertise of the private sector to give better services, higher quality and more resources for NHS patients. Under the Private Finance Initiative, the NHS is encouraged to use innovative developments in line with the guidance on private finance issued by the NHS Executive in 1993 (see *Private Finance Guide*).

Private finance is taken to be involved when the ownership or use of capital assets is obtained by any means other than direct purchase financed by allocations, receipts or donations. Examples include leasing, contracting out of capital-intensive services and joint ventures where the NHS benefits significantly from the arrangement. Approval procedures are described in the *Private Finance Guide*.

Business Cases

A business case must convincingly demonstrate that the project is economically sound (through an option appraisal), is financially viable (affordable to the Trust and purchasers) and will be well managed. In addition a business case for any investment should show that the proposal has clearly identified benefits for patients and that it is supported by purchasers. The success of any major investment may ultimately depend on the extent to which the resulting revenue consequences are supported by purchasers.

It is important to distinguish between appraisal approaches that are concerned with examining investment decisions from the perspective of the public purse and those which focus on the affordability of the scheme to the proposing Trust. Economic appraisal based on cost-benefit analysis

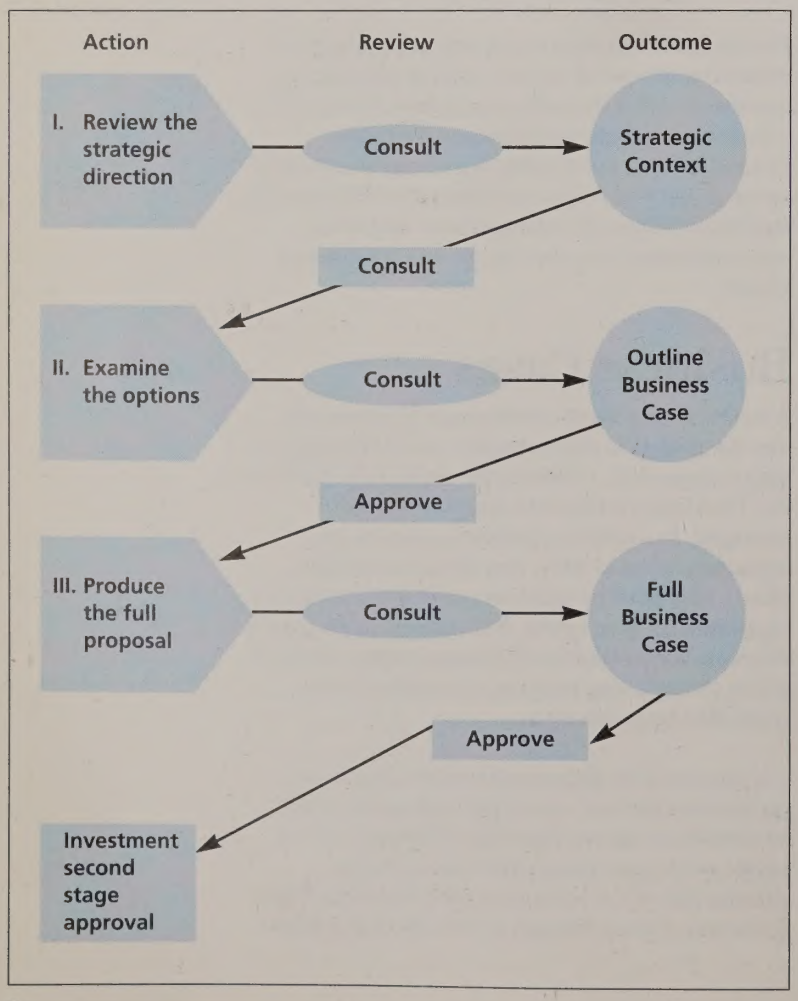
seeks to identify the best solution for the NHS as a whole. It attempts to measure both the costs and benefits of all the alternatives under consideration using, as far as is possible, monetary values. The optimal solution will be that which affords the greatest ratio of benefits to costs. The aim of financial appraisal is to evaluate the affordability to the Trust and its purchasers of an investment decision.

Preparing a Business Case

Preparing and presenting a robust business case can be costly. It may involve a great deal of management time to assess changing needs and conduct detailed analyses to identify a solution that considers costs, benefits and potential risks. It is therefore important to understand the process and plan for it carefully. It should clearly present valid answers to the key questions:

- What services should be provided now and in the future?
- How will these service requirements be met in the most efficient and effective way?
- Why is capital spending proposed?
- How does this proposal offer good value for money?

FIGURE 2 THE BUSINESS CASE PROCESS



- How will the project be managed if the proposal is accepted?

The investment which the business case supports must meet a definable health need in order to meet one or more of the following goals:

- maintain current services, both in quantity and quality;
- improve the quality of services;
- enable existing services to expand;
- enable new services to be provided; or
- enable rationalisation to generate revenue cost savings.

The preparation of a capital investment proposal can itself be lengthy and resource intensive. By staging the process, work is channelled towards the development of proposals that demonstrate clear strategic direction, and which have been developed by properly examining a range of options before embarking on detailed planning and development. The aim is to achieve cost-effective investment appraisal which minimises unnecessary expenditure.

Scope of Work

The scope of work required to complete each phase and the boundaries between phases will vary from case to case. By considering the steps set out in this guide, Trusts will be able to assess more precisely the work needed to develop a business case in their circumstances. For smaller, relatively simple projects it may not be sensible or cost-effective to apply these procedures in full. Nevertheless it is important that public accountability be maintained and that value for money is obtained in meeting the project's objectives.

Discussion between Trusts and Regional Offices about the degree of detail required is essential before embarking on the preparation of Outline or Full Business Cases, and dialogue between them during each phase is strongly recommended. NHS Estates also provide a service enabling Trusts and NHS Executive Regional Offices to discuss technical aspects of estate options. For large scheme proposals, consultation with HM Treasury may be necessary.

Managing the Business Case Project

Chief executives will be responsible for the management of capital schemes throughout the investment process, from inception to post-project evaluation. The Trust Board in its role of Investment Decision Maker (IDM) will ultimately decide whether to invest resources in any given significant project. The chief executive, as the Project Owner, may delegate to a *project director* the responsibility for ensuring that the project is co-ordinated, well managed and that the objectives of the project are met. The project director, who might be a senior manager in the organisation, will report directly to the chief executive. However, the

chief executive will ultimately remain responsible for managing the project throughout its life. *Project Organisation* provides more detailed guidance on establishing effective project structures. It includes a chapter on the use of the PRINCE methodology, the use of which is mandatory for major IM&T investments in the NHS.

Trusts are recommended to establish a project management system and procedure for developing the business case. Production of a business case should be treated as a project, with each of the phases regarded as sub-projects in their own right. This entails setting budgets and timescales, and developing a detailed project plan to establish resource inputs, tasks and related target dates.

Business Case Team

The preparation of a business case requires contributions from a multi-disciplinary team. This team should be constituted to undertake the work for each phase and be thoroughly conversant with all its aspects. This team, together with the project director, must be able to demonstrate its ability to act as an 'informed' client. Normally, the input from the team should be managed by the project director, but for larger and more complex schemes a *project manager*, reporting to the project director, may be appointed to conduct the detailed work and manage the business case team. The skills, experience and knowledge that are required to develop a business case include:

- Trust business planning;
- management and operation of health care services;
- financial analysis and costing;
- clinical experience;
- construction and property planning and management; and
- management and administration of assets.

Further details are available from the *Project Organisation* booklet.

It is probable, therefore, that the business case team will need to draw on a wide range of in-house skills and experience: medical, nursing, planning, accounting, professional and estate management. There may be a requirement for training, since few, if any, team members will have previous experience of investment appraisal or the business case process. External professional advice will often be needed: for example, from architects, surveyors, engineers and management consultants. The perspective of principal purchasers is also essential, and their support is required for investment proposals. Purchasers should be involved in the consideration of service requirements, and the identification of investment objectives and benefits.

External Involvement

Effective strategic reviews (Phase I) and Outline Business Cases (Phase II) are unlikely to be concluded successfully unless there has been a dialogue throughout the process between the NHS Trust and its NHS Executive Regional Office. In addition, wider involvement, commensurate with the anticipated level of the investment, may be essential, especially at the transition points from phase to phase. This might take the form of discussion with purchasers, District Health Authorities (DHA) and GPs, and surveys of 'clients' – patients and the wider community.

Trusts considering a capital scheme which is likely to affect teaching and research facilities will need to liaise closely with the local university at the earliest stage possible. However, the availability of capital funds to the university, including those from the Higher Education Funding Council for England (HEFCE), is unlikely to be known at an early stage.

Clearly judgment needs to be exercised about the level of external involvement and its timing. Any proposed development which addresses the objective of achieving seamless continuity of care in the locality will require consultation with other providers.

Internal Participation

The involvement and support of a range of managers and staff may be vital to the success of the business case, both to determine the requirement and scope of the investment, and also to participate in subsequent stages of planning. It is important, therefore, to identify and involve key stakeholders who have a direct interest in the impact of any new initiative and upon whom the realisation of benefits from the investment will depend. Typically, these will be leading clinicians, nurse managers and departmental heads.

For larger proposals, it can also be vital that all NHS Trust staff who may be affected by the proposed capital investment are consulted and given appropriate opportunities to participate in the decision-making process. Realisation of the benefits of a capital investment will often be more fully achieved when the staff involved as users of new facilities participate and become committed to the changes at an early stage.

Business Case Budget

For major capital investments, the preparation of Outline and Full Business Cases is a costly and time-consuming activity. Estimates of the level of resources and timescales to prepare a business case vary considerably. They depend on the type and size of the potential investment, its level of risk and the complexity associated with it. A suggested budget is 1% of the estimated value of the capital investment for the total resource costs of Phases II and III combined (Outline and Full Business Case). On this basis, a £60 million investment might require a budget of £600,000 to cover the cost of staff time and external support (e.g. for perhaps five to eight person-years of senior staff time, plus professional services and consultants).

Timescale

The elapsed time to conduct a strategic review and prepare Outline and Full Business Cases depends on the scale of the potential investment, the resources deployed and its degree of complexity. Indicative timescales for each phase of a typical investment are:

- Phase I: three to six months (linked to the business planning cycle);
- Phase II: approximately three months;
- Phase III: approximately six months (depending on the comprehensiveness of Phase II).

Clearly, small straightforward schemes may take only a few months, while the largest schemes can take much longer.

Executive Summary

The three phases entail nine steps in all, which are presented in sequence in this guide. At the end of each of these steps is a *checklist* of the main activities within each stage of the process. The process is *iterative*, and it is important to note that as the business case is developed it will be necessary to go back to previous steps in order to review work done in earlier phases. The process is also *flexible*, with the quantity and depth of work tailored to the specific requirements of individual proposed schemes.

First Phase: Strategic Context (Step 1)

Prerequisites for an NHS Trust considering a capital investment are that it has a clear, documented business and service strategy, to which its information and estate investment strategies are linked. The strategic context of the business case for capital investment should not be confused with a Trust's Strategic Direction. Strategic Directions are required internally by Trusts and by the National Health Service Executive regardless of whether or not an investment is intended. The strategic context of a business case will need to draw on the Trust's Strategic Direction, elaborating on those elements which are relevant to the proposed investment.

The Case for Change

The objectives of Phase I are to provide clear reasons for change, and to ensure that any proposed capital investment is both consistent with the Trust's Strategic Direction and affordable to purchasers. In examining the need for a capital investment, it will be important that the Trust considers fully the case for change – including what is wrong with the status quo.

Understanding the factors that are likely to affect the affordability or otherwise of a scheme is an essential corollary to demonstrating the need for investment. There would be little value in investing in a scheme that cannot be demonstrated to be affordable to the Trust and its purchasers. Hence an analysis of affordability is an integral component of setting the strategic context for a business case.

Any bid for capital investment will need to be put in the context of the Trust's long-term goals and objectives for the range of services it expects to provide. Accordingly, it should cover four main areas:

- Confirmation of the Strategic Direction and business objectives of the Trust.
- Review of the current position of the Trust, taking account of:
  - the current activities and services provided by the Trust;
  - the financial situation of the Trust and current costs;
  - the condition and utilisation of the Trust's estate; and
  - the suitability and functionality of the Trust's information systems.
- An analysis of the market and the Trust's market position through:
  - a review of purchasers' strategic intentions and plans, which should include an analysis of the local demography and demand for health care;
  - an assessment of future likely influences on health care provision, for example, the shift from secondary to primary health care, advances in medicine and technology, and the development of new practices in the management of patients, future provision of medical, dental and PAMS education;
  - an exploration of competitors' strengths and weaknesses.
- Documentation of service requirements through an analysis of the factors given above. Such analysis should focus on the Trust's ability to meet the perceived demand for its services.

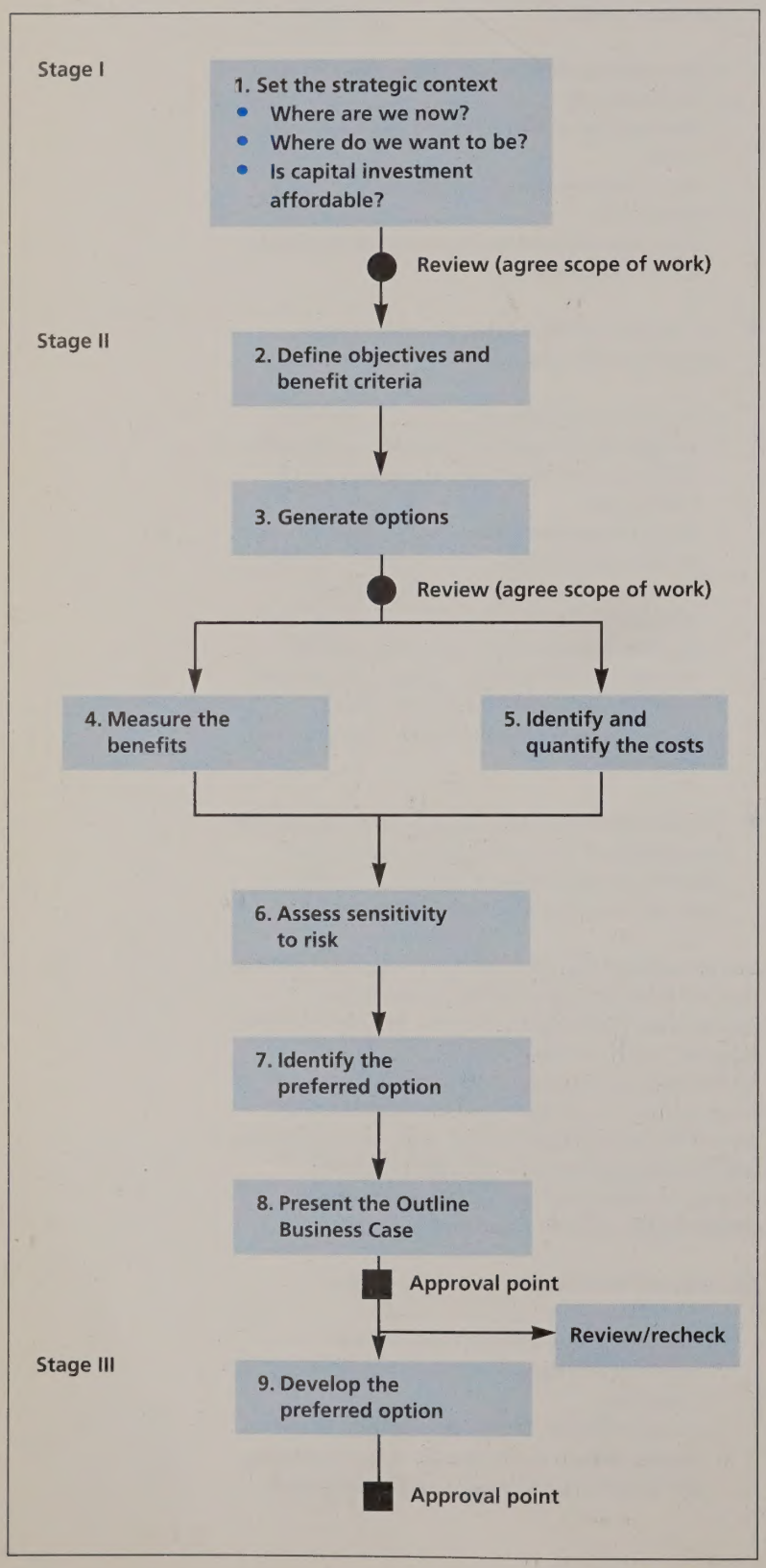
It is recognised that for some investment proposals this full approach may not be necessary or appropriate. This may be the case for some smaller schemes, such as minor refurbishment or incremental developments to particular facilities. Even in these cases there will be aspects of this step in the process that will be relevant, and Trusts will be expected to show that the proposed scheme is consistent with longer-term service requirements and its business objectives.

The outputs from Phase I should include:

- documentation of the Trust's capital investment strategy and clear business objectives;
- demonstration of an understanding of the market within which the Trust operates and the Trust's own strengths and weaknesses;

- demonstration of the affordability of investment;
- an outline description of the services which the Trust intends to provide in the future, noting areas for development and retrenchment;
- identification of specific service developments that are required; and
- an indication of the affordability of investment to purchasers.

FIGURE 3 STEPS IN THE BUSINESS CASE PROCESS



It is important that the conclusions drawn from this phase of work inform the work undertaken in Phase II. It is equally important that implications of any proposed capital solution are well understood and verified before proceeding to Phase II. Consultation with the NHS Executive Regional Office at the end of this phase is strongly advised. Where the outcome represents a major re-configuration of sites or services, it may also be advisable to notify the NHS Executive and the Treasury.

Second Phase: Outline Business Case (Steps 2 to 8)

The objective of Phase II is to identify the preferred option for the investment, through an objective investment appraisal process. This will involve the following activities:

- identification of the objectives of the investment and their link to the Trust's strategy and overall business objectives which should be linked to the overall purchasing strategy;
- identification of the benefits expected as a result of the planned investment;
- identification of any constraints on the means of achieving the objectives of the investment;
- generation of a full list of options for meeting the objectives of the investment and a short list sifted on the basis of agreed criteria;
- an assessment of the costs and benefits of each short-listed option;
- a risk analysis, and an assessment of the impact of the investment on the Trust's prices; and
- identification of the preferred option.

It is expected that the amount of work to produce an outline case will vary from one proposal to another. NHS Trusts and NHS Executive Regional Offices will have to agree how much detailed work is required for the Trust to present a valid solution. The effort expended in Phase II should reflect the likely size of the scheme and the complexity of the choice. It is particularly important that tenable options are not ruled out before being properly considered.

If the outcome of the option generation exercise is an indication that an IM&T-based solution is likely to be required, the subsequent steps of the business case process will need to include examination of the viability, availability and likely costs of potential solutions. POISE (Procurement of Information Systems Effectively) is the method recommended for the procurement of all IM&T-based solutions in the NHS. Steps 1–6 of POISE should be incorporated within the production of an

Outline Business Case. Detailed guidance on POISE is available from NHS Supplies in the following Guides:

- *POISE: A Guide for Managers*
- *POISE: A Step-by-step Approach*
- *Specifying and Summarising Needs*
- *Draft Contracts and Schedules*
- *Implementation – the Role of Procurement*
- *POISE in relation to European Procurement.*

Advice and support on the use of POISE is available from local Divisional Supplies or from:

Computing and Telecomms Group
NHS Supplies
Apex Plaza
Forbury Road
Reading RG1 1AX
Tel: (0734) 595085

2.1.4 The outputs from Phase II are an Outline Business Case, covering all aspects of the work carried out in this phase, but with a focus on:

- the objectives of the investment;
- the short-listed options and the costs, benefits and risks related to each option;
- the preferred option (in outline) and the impact on the Trust's position in the market and ability to meet financial and service objectives; and
- for IM&T investments the Detailed Statement of Need (DSON) – POISE Step 6 – should be included for the preferred option.

Outline Business Cases are to be presented to the NHS Executive Regional Office for approval and discussed with main purchasers before proceeding to the next phase. Following approval, Regional Offices should discuss with Trusts the scope of work that will have to be undertaken to produce a Full Business Case.

Third Phase: Full Business Case (Step 9)

Once the Outline Business Case has been approved, the investment appraisal will proceed to Phase III: production of the Full Business Case. Normally Trusts will proceed to Phase III only if capital funds have been identified and purchaser support obtained. Phase III presents an opportunity to validate the work in Phases I and II, but primarily to develop the preferred option. This involves a reappraisal of the preferred option with detailed costings and development of plans for managing the project. The third phase has five components:

- A review of Phase I, including more precise quantification of future service requirements.
- A review of Phase II, including validation of the main elements of the investment appraisal carried out for the Outline Business Case.
- Professional certification by the director of finance and endorsement by the Trust chief executive, or their equivalents for other NHS bodies.
- Detailed development of the preferred option.
- Formulation of plans for project monitoring and post-project evaluation.

The output of Phase III is an updated and more precise assessment of the strategic context and an expanded Outline Business Case which will constitute the Full Business Case. This will clearly present the arguments for the planned investment and demonstrate that the Trust can deliver the scheme on time and to budget.

All planned investments, irrespective of size and complexity, should involve at least the completion of Phases I and II. For investments above delegated limits,[1] an Outline Business Case should be submitted for approval to the NHS Executive Regional Office.

Approval to proceed to Full Business Case will be given by the Regional Office. Trusts should proceed to the production of a Full Business Case only if capital funds have been identified and purchaser support obtained. Any comments concerning the Outline Business Case from the NHS Executive should be addressed in the Full Business Case.

For those schemes outside NHS Executive Regional Office delegated limits there will be a two-stage approval process. The introduction of a second-stage approval reflects the NHS Executive's concern as a result of recent failures to adequately manage the implementation of projects following approval. Second-stage approval for construction schemes will take the form of a pro-forma intended primarily to confirm the continued viability of an investment closer to the time when resources are finally committed. Further details and a copy of the pro-forma are contained in *Management of Construction Projects.*

The first approval will be given at Full Business Case. With regard to construction schemes, for those that plan to follow the traditional procurement route involving a discrete design stage, second-stage approval will take place following the completion of the design. For those schemes that will involve the use of an alternative procurement route, for example 'Design and Build', an appropriate point for second-stage approval will be agreed upon within the approval decision at Full Business Case.

[1]It should be noted that thresholds and delegated limits may be reviewed and revised from time to time, and some special cases below the threshold may be reviewed by the NHS Executive.

The Phases of the Business Case

Phase I: Establishing the Strategic Context

Step 1 Set the Investment within the Strategic Context

1.1.1 This section outlines the approach that should be followed to undertake a comprehensive strategic review of the NHS Trust. An understanding of the market in which a Trust operates is essential for ascertaining the need for investment, for determining the appropriate level and mix of future services, and for evaluating different investment decisions. This will necessitate knowledge of purchasers' requirements and the ability of the Trust to respond to them, as well as a knowledge of the characteristics and plans of competitor provider units.

1.1.2 Before considering any capital investment and starting to prepare a business case, it is essential to address two major questions:

- Where are we now?
- Where do we want to be?

1.1.3 The answers to these questions set the strategic context for a capital investment strategy. Only when they have been answered can a third question, 'How do we get there?', be tackled.

1.1.4 The general purpose of a strategic review is to set the direction for the future development of the Trust. Within the context of developing a business case to support a capital investment, the aim is to establish that there exists a mismatch between future service needs and existing capital resources. The aim is not to provide justification for a course of action that has already been decided; indeed the outcome may not be a capital solution at all. Strategic review will already be a regular feature of business planning for many Trusts with the aim of aligning providers' objectives with the changing demands of the market.

Strategic Direction and Business Objectives

1.2.1 The investment decision needs to be well founded within the Trust's Strategic Direction, demonstrating a need for change and investment. The business objectives and the Strategic Direction of the Trust may already be clearly set out as part of the normal planning process. However, if these were narrowly defined in the past or only in outline, or if circumstances have changed, then a more detailed reassessment will be necessary. The strategic context of a business case will need to examine the specific case for the proposed investment. This may mean more specific market analysis, demand modelling and assessment of service requirements, to ensure that the capital investment proposal is going to be acceptable both to purchasers of health care services and to those funding any potential investment.

1.2.2 The strategic context of the business case for a proposed investment in IM&T should draw heavily on the unit's IM&T strategy, which in turn will reflect the unit's business goals. Guidance on the production of an IM&T strategy is provided in *Strategic Planning in the NHS*, published by the Information Management Group of the NHS Executive. This guidance provides a framework within which NHS organisations can plan, develop, implement and maintain an IM&T strategy.

1.2.3 Figure 4 illustrates the strategic approach to capital planning. The amount of effort which goes into this phase of the work must clearly be tailored to the size and importance of the likely proposal that may emerge.

Assessing the Situation: Where are We Now?

1.3.1 An assessment of the present position and past trends of the Trust is the starting-point for the strategic review. Generally, four main aspects need to be assessed:

- the activities of the Trust and the health care services that it provides;
- the condition and use of the Trust's buildings and equipment;
- status and effectiveness of current information management and systems; and
- the financial situation of the Trust and current cost structure.

APPRAISE CURRENT HEALTH CARE SERVICES

1.4.1 The first part of a review of a Trust's present situation to be tackled is the preparation of an up-to-date profile of the services pertinent to any potential capital investment proposal. This ascertains exactly what is currently being provided by the Trust. Among the aspects it must focus on are:

- range and quantity of clinical, diagnostic and therapy services;
- diagnostic and treatment facilities employed;
- characteristics of service delivery;

- service performance, quality and purchasers' requirements; and
- service demand.

1.4.2 Table 1 lists some of the key questions that a review of current service provision should address. It is important not only to ask 'What are we doing now?' (list and quantify activities), but also 'Why are we doing it?' (some services could be contracted out) and 'How well are we doing?' (measure and evaluate performance).

DESCRIBE THE ASSETS OF THE TRUST

1.5.1 The second aspect of a review of a Trust's present position is an assessment of its assets and their utilisation. In this context, assets consist of land, buildings, information systems, plant and equipment. Although usually of lesser monetary value than the other items, equipment must not be overlooked in an asset review.

1.5.2 Property (land, buildings and plant) appraisal is addressed by analysing the following:

- physical and functional standard;
- space utilisation;
- revenue costs of running the estate;
- location and accessibility; and
- planning constraints on development.

1.5.3 Table 2 lists some questions that should be among those asked to conduct a property appraisal.

1.5.4 IM&T systems appraisal would normally include the following:

- status and effectiveness of the current organisation;
- use of information systems and technology that support the organisation;
- the identification of any constraints which might impact on the implementation of information systems and technology: financial, technical and acceptability; and
- costs of maintaining the current systems.

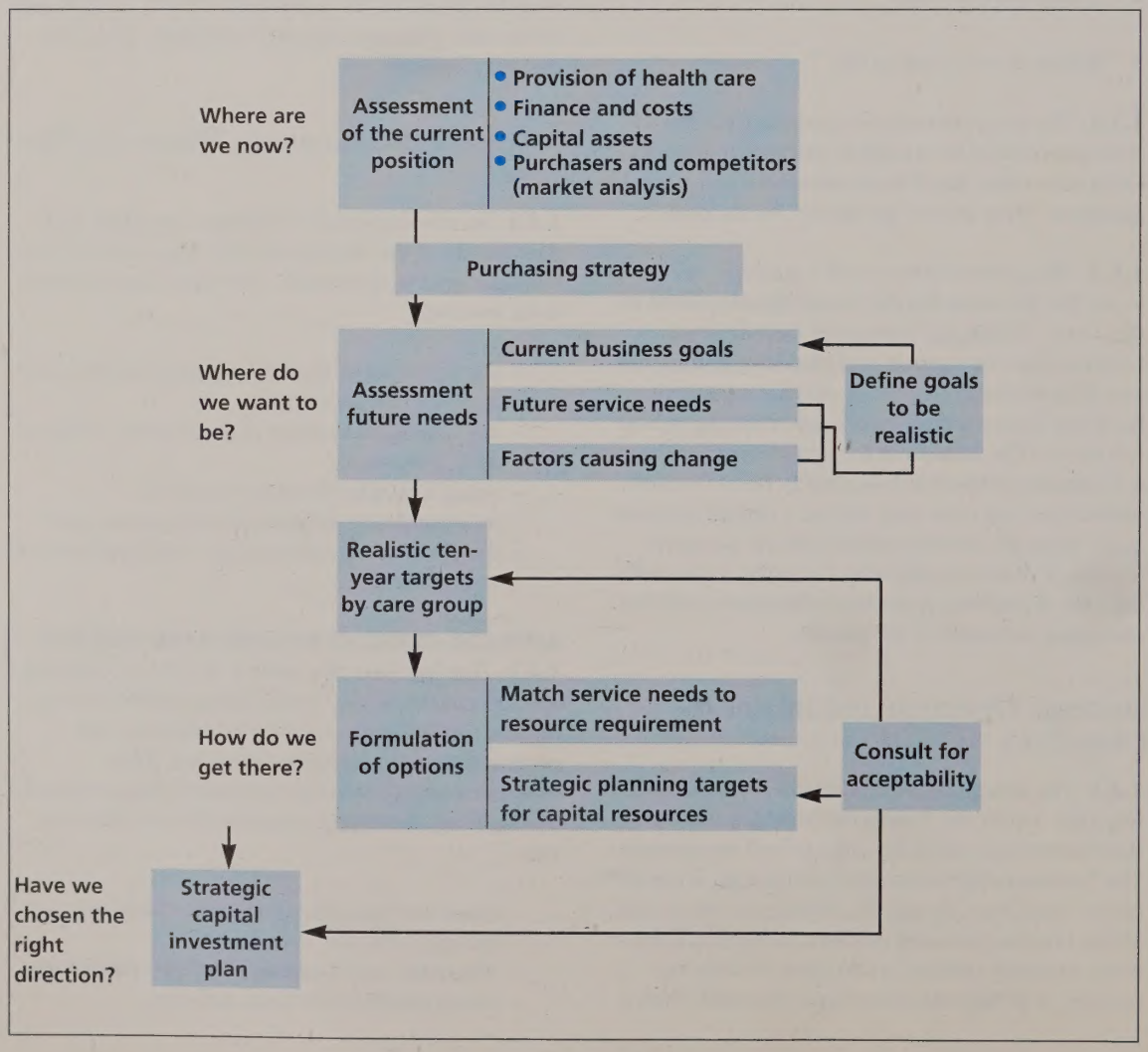
1.5.5 Table 3 lists some typical issues that should be addressed in reviewing the status of the unit's IM&T services.

1.5.6 A review of equipment should focus on such features as age and condition, degree of obsolescence, operational capacity and utilisation, anticipated life, space requirements, and maintenance and other running costs.

ASSESS FINANCIAL SITUATION AND CURRENT COST STRUCTURE

1.6.1 The third aspect of understanding the present position of the Trust is to consider its

FIGURE 4 CAPITAL PLANNING: A STRATEGIC APPROACH



financial position and cost structure. This entails analysing and assessing:

- current expenditure projections (capital and revenue);
- current financial projections (NHS Trust financial pro-formas);
- expenditure by service type;
- unit prices;
- income breakdown by purchaser; and
- main purchasers' long-term revenue positions.

1.6.2 The aim is to explain the cost structure, understand the trends and explain differences that arise from comparison with other provider units.

TABLE 1 ILLUSTRATIVE QUESTIONS TO CONDUCT A PROFILE OF THE SERVICE

Service performance and quality
How well do services meet purchasers' requirements (e.g. service levels, quality, accessibility, price, etc)?
What do patients think of the service they receive (e.g. from surveys such as the HPAU 'What the patient thinks' survey, 1992)?
What do general practitioners think of the Trust (e.g. from perceptions gathered from GP surveys)?
How do the Trust's quality-of-service indicators compare with national averages?
How does the utilisation of current facilities compare with national performance indicators?
What has been the recent change in waiting lists?
To what extent will past trends continue?
How well are we meeting clinical standards (e.g. CEPOD)?

Range and quantity of clinical, diagnostic and therapy services
What clinical specialties are provided?
What diagnostic and therapeutic services are there?
What is the patient activity for each of the main specialties and services (consultant episodes, in-patients, out-patients, clinics, day cases, etc)?

Diagnostic and treatment facilities employed
What are the number, specialty and location of beds, operating theatres, x-ray rooms and other major diagnostic or treatment facilities?
What are the utilisation rates of these facilities?

Characteristics of service delivery
What is the average length of in-patient stay and turnover interval by specialty (in-patient throughput)?
What proportion of treatments are conducted as day cases by specialty?
How is each main service organised and managed?
What are current plans to alter and improve patient-focused services?
How has the Trust responded to clinical and technological developments (e.g. minimally invasive therapies)?
What resources are deployed in providing services?

Service demand
What do past trends indicate about future requirements?
What are the referral patterns: tertiary? from GPs? from social services?
Where does the population served come from?

TABLE 2 ILLUSTRATIVE QUESTIONS TO CONDUCT A PROPERTY APPRAISAL

Physical and functional standard
What is the physical condition of the buildings by block (ABCD*)?
What is the level of compliance of buildings with statutory standards (ABCD*) (e.g. fire and health and safety)?
What is the suitability of the buildings for the functions that they are intended for (ABCD*)?
What is the energy performance of the buildings (ABCD*)?
What are the reasons for the categorisations given (ABCD*)?
How do the physical and functional standards of the premises affect the quality of patient care (e.g. privacy, noise, manpower levels)?

Space utilisation
What is the location of facilities on the site?
Where is the current patient accommodation?
What are the advantages and disadvantages of the present layout of the site?
What is the volume of building space per inpatient bed (e.g. total floor space to number of beds)?
What space is unused/under-utilised in the buildings?
What land is unused/under-utilised on the site?

Revenue costs of running the estate
What is the total property overhead per square metre?
How does the property overhead break down (e.g. capital charge, depreciation, maintenance, decoration, heating, lighting, ventilation, cleaning, security, etc)?

Location and accessibility
Where is the Trust located in relation to the population served?
What are the main roads giving access?
What is the public transport provided to the Trust's site?
What are the results of recent public and private transport accessibility studies?
What are the car-parking facilities at the site?

*Estates Category as defined in ESTATECODE.

Assessing Demand – Market Analysis

THE ROLE OF PURCHASERS

1.7.1 Responsibility for delivering major capital schemes will rest with the chief executives of the provider units that propose them. Nevertheless it will be essential for purchasers to be involved in the planning process. It is the responsibility of purchasers to develop a comprehensive purchasing strategy. Ideally, DHAs will set out their purchasing intentions in Purchasing Plans, and ten-year forecasts of future service need by care group will be available, although in practice they will be subject to considerable uncertainty. In order that Trusts can plan capital spending effectively, purchasing authorities must be encouraged to:

- forecast future requirements and priorities in detail for at least three to five years;
- give an indicative view of their requirements over ten years;
- contribute to the analysis of the case for change to the status quo, which seeks to justify the need for capital investment;
- input to the market analysis to help determine the future levels and mix of services and/or information;
- confirm the income assumptions needed to demonstrate a scheme's affordability, including acceptance (or otherwise) of the likely price effect of investment decisions;
- contribute to the evaluation of investment options, in particular with regard to the non-financial or qualitative aspects; and
- formally provide explicit support to capital investment proposals, confirming that the proposed solution meets purchaser requirements in terms of content, quality and cost.

TABLE 3 ILLUSTRATIVE ISSUES TO BE ADDRESSED IN CONDUCTING AN IM&T APPRAISAL

Current IM&T facilities
Fit to current business needs.

Relative status of the organisation's IM&T, measured against general trends in the development of IM&T in similar organisations.

The organisation's 'information culture'
The use of information in the operational process.
Data quality.
Ownership over information production process.
Adequacy of training.

Functional adequacy of systems
Data accuracy and currency.
Reliability of data.
Ease of use.
Adequacy of user support.

Technical adequacy of systems, IT and networking
Ease of maintenance.
Ease of operation.
Currency of technology.
Standards compliance.

Organisation of information services
How information services are provided.
Their capabilities.

Extent of reliance on external provision of IM&T services
Desire for less/more autonomy and self-sufficiency in IM&T matters.

Arrangements for managing IM&T
Funding control and processes.
Application of policies and standards.
IM&T staffing and skills.
Structure of any IM&T Department.

1.7.2 It is likely that providers and purchasers will need to work in partnership to ensure that future forecasts can be met. However, as well as insight into purchasers' intentions, providers will often find it necessary to conduct comprehensive market research of their own to underpin demand forecasts obtained from purchasers.

1.7.3 An understanding will also need to be developed of the configuration of primary, secondary and tertiary care in the context of the Trust's service provision and purchasers' requirements. This review will need to examine how the Trust's services fit into a pattern of community services, referral arrangements and facilities in district hospitals which provides continuity of care for the local population.

UNDERSTANDING THE DEMAND FOR HEALTH CARE SERVICES

1.8.1 Providers must not only know the pattern of current contracts and GP referrals, but have a clear view of factors that will influence future demand. In this they will be informed by analyses of disaggregated population data (demographics), such as:

- population by age group;
- socio-economic structure;
- morbidity;
- population centres; and
- deprivation.

1.8.2 Changes in these demographic factors will affect, for example, purchasers' weighted capitation and, therefore, their ability to purchase health care.

1.8.3 Demand analysis is fundamental to investment decision-making. While purchasers (DHAs, Health Commissions and increasingly GP fund-holders) focus on assessing the health care needs of their resident populations and practice lists, providers will need to concentrate on the demand for services likely to face them in the future. This will involve analysis of the size and structure of the market within which the Trust operates and a realistic assessment of the share of that market likely to be attracted by the Trust in future. Business cases have to show that the

competitive position of the Trust has been assessed against the background of the market which it serves.

1.8.4 Levels of demand will need to be 'translated' into the levels of provision required to deliver the service. This means establishing target levels of performance for future provision in the context of forecast changes to medical and management practice.

1.8.5 In assessing future levels of demand and supply, it is important to take full account of the pressures for change to current patterns of service delivery, and any impact this may have on the Trust's information requirements. Figure 5 summarises some of the key pressures for change at the moment. This type of analysis might appear more relevant to investments in major building schemes than in IM&T. However, it is important to recognise that the level and pattern of future service provision are critical factors in determining the scope and nature of the information systems required to support the delivery of care.

COMPETITORS

1.9.1 Where the proposals are likely to affect a significant service change, Trusts should compile information about all the provider units in the surrounding area from whom purchasers may obtain competing services. The type of information about each competitor that is likely to be useful includes:

- profiles of the health-care services that they provide (as in Table 1);
- variation in the level and quality of services provided;
- travel time from the centres of population served;
- overlaps with the population served by the Trust;
- recent and planned developments to increase capacity or quality, or to reduce costs; and
- known constraints, for example, on capacity or accessibility.

1.9.2 As well as individual competitor analyses, competitive reviews should include an assessment of the pattern of service provision in the locality, its deficiencies and potential for improvement. It is important that this focuses not only on current service provision but also on the forecast future pattern.

COMPETITIVE ANALYSIS

1.10.1 Demonstratiion of an understanding of the competitive forces in the market which is served by the Trust is a prerequisite for a successful business case. A useful framework for analysis examines five key influences:

- competition: rivalry between existing providers;
- new entrants: the potential for new providers to enter the market;
- buyers: purchasers' power to influence providers;
- providers: degree of provider's ability to influence purchasers; and

FIGURE 5 PRESSURES FOR CHANGE

NHS Executive policy initiatives/priorities, e.g:
- *Health of the Nation;*
- community care;
- *Caring for People;*
- *Patients' Charter;*
- junior doctors' New Deal;
- IM&T strategy.

National trends, e.g:
- developments in medical technology and practice;
- impacts of the assessment of effectiveness of elements of health care services;
- changes in role/purpose/shape of acute sector, e.g.;
  - increase in home-based care;
  - increase in primary/community-based care;
  - patient-focused hospital;
- productivity trends (including day surgery);
- localised centralisation of specialist services.

Regional policity initiatives/priorities, e.g:
- LIG;
- specialty reviews;
- strategic 'Tomlinson-type' reviews.

Local health strategy (purchaser) issues, e.g:
- purchaser strategies and intentions;
- current utilisation versus anticipated needs;
- demographic and social change;
- specific care group strategies, e.g. elderly, mental health, etc.;
- alternative providers (including private sector);
- resource framework/availability of resources.

Local organisational issues, e.g:
- impact of GP fundholding (content and process);
- impact of change in organisation of purchasing (e.g. locality focus in purchasing, future mergers etc);
- contracting for packages of care;
- strategic relationships/partnerships with other providers.

Local provider issues, e.g:
- competitive position;
- performance;
  - bed, utilisation;
  - price;
  - quality;
- service developments;
- planned investment (buildings and equipment,IM&T, private finance);
- resource availability (finance, estate, human and information);
- geographical referral and admissions practices.

– alternatives: scope for new approaches to substitute for existing practices.

1.10.2 This type of analysis is aimed at helping Trust managers to understand the factors that are likely to influence success in the market. More details of this analytical framework are given in Appendix 1.

Establishing the Strategic Direction: Where do We Want to Be?

1.11.1 Answering the second important question, 'Where do we want to be?', is about determining what level, quality and cost of service the Trust will seek to achieve to meet demand in its market. Alternatively it may be about gaining a full understanding of the organisation's strategic information needs. Once these requirements have been identified, the Trust will be in a position to assess whether a case for change can be made.

UNDERSTANDING FUTURE NEEDS AND DEMANDS

1.12.1 Business cases must exhibit a full understanding of the future needs and demand for health care services in the locality. An understanding of the local and Regional demand profile follows from making a full assessment of the Trust's present situation, purchasers' requirements and its competitive position, covering the aspects outlined above. The current service profile and purchasers' intentions provide base figures for market demand, on the assumption that the market stays constant and that current productivity targets are achieved. The service facilities that have to be provided are derived from the service volumes that will be demanded. Associated with the baseline will be a need for a certain number of beds, operating theatres and other service facilities.

1.12.2 The market, and the demands generated that will have to be met, should be considered under various scenarios. This is done by quantifying the extent by which the service requirement is sensitive to variations in such factors as demography, market share or productivity. It is impossible to predict the future with any precision but a good understanding of the possible range of requirements will lead to the development of more flexible solutions. In particular, the flexibility provided by any investment proposal to react to short-term changes is important.

ASSESSING THE SCOPE FOR IMPROVEMENT

1.13.1 By this stage, it may be helpful to apply some of the established techniques of strategic review to assimilate the large amount of data that has been gathered and assess the scope for improvement. A simple and widely used method is SWOT analysis, described in Appendix 1. This is particularly effective if it focuses on serving the market, by looking internally, at strengths which can be built on and weaknesses which should be tackled, and externally, at the opportunity to serve the market better and counter threats from competition.

MATCHING CAPITAL ASSETS TO SERVICE NEEDS

1.14.1 Only after the service facilities that will be needed have been determined, and the associated opportunities identified, can the future size and shape of the local health care estate, or the requirements for IM&T, be determined. It is at this point in a strategic review that a statement of the future property or information requirements is produced. This assessment can then be compared with the existing volume, configuration and quality of capital resources identified in surveys of asset condition and space utilisation. Consideration of the Trust's future service needs and capital assets together is the only means of ensuring that capital resources are planned correctly.

ESTABLISHING THE CASE FOR CHANGE

1.15.1 All business case proposals for capital investment must be driven by a service strategy which aims to meet identified needs for health care and health gain. It is likely therefore that capital investment proposals will offer:

- delivery of an additional volume of service to meet identified increases in demand;
- delivery of a reduced volume of service because of an expected decrease in demand;
- delivery of new services, or existing services in a new way;
- maintaining or enhancing the quality of the environment in which services are provided;
- better value for money through improvements to the productivity of the human resources, IM&T services or a part of the estate; and
- improved financial performance.

1.15.2 If a case for change arises – for rejecting the 'do nothing' strategic option – then providers should consult widely to confirm that this outcome is acceptable. Consultation should be internal, between planners, estate or information managers and clinicians, and external, with purchasers and possibly other providers, and where appropriate with universities and research funders.

1.15.3 It is possible that the conclusion of the strategic review will point to a set of specific objectives for capital investment, and a range of tenable options may also be apparent. In these circumstances, Phase I will, in effect, incorporate the next two steps of the business case process (Steps 2 and 3), which will normally constitute part of Phase II of the process.

AFFORDABILITY

1.16.1 The affordability of a capital investment solution is a critical constraint on the business case. Purchasers' support will need to be elicited at the outset. Purchasers may be unwilling or unable to pay higher prices which include capital charges. Trusts will need to consider options that allow service delivery to be improved without raising unit costs.

1.16.2 When considering affordability it is important to note that the ability of purchasers to pay capital charges might change in the future. The move towards capital charge allocations based on weighted capitation, or a fragmentation of purchasing caused by growing numbers of GP fund-holders, might prejudice the long-term future of expensive developments.

JOINT PROPOSALS WITH UNIVERSITIES

1.17.1 Universities should share the costs of schemes containing a teaching and research element. In these situations, NHS Trusts must consult with the university to establish its views on the costs, benefits and financial implications from the university's perspective. Trusts should also confirm that the teaching/academic content of schemes will attract funding from the HEFCE or the appropriate bodies in Scotland, Wales or Northern Ireland.

1.17.2 The capital funds for the teaching/academic element must be identified in the option concerned, but with appraisal projections adjusted for reimbursement of capital payments and running costs for the teaching/academic element, as agreed with the university and HEFCE.

1.17.3 As a general rule it is expected that Trusts will seek to invest cost effectively, preferably reducing unit costs even when higher capital charges are included. This can often be achieved by rationalising service provision and the estate.

PLANNING FOR THE NEXT STEP

1.18.1 It is recommended that, at the conclusion of the strategic review, findings are discussed with the NHS Executive Regional Office with a view to proceeding to the next phase of the process: preparation of an Outline Business Case. Main purchasers' perspectives on the validity of the conclusions that have been made will also be important. Because investment appraisal and the preparation of business cases are often costly, Trusts should not proceed to further work before taking the opportunity to verify their analyses. This may involve informing the NHS Executive of future plans.

1.18.2 It is also recommended that agreement is then established between Trusts and the Regional Office about the scope of work in Phase II, on the basis of a mutual assessment of the conclusions from this phase. Trusts may then produce a project plan for the next phase of work and, if it is appropriate and they have not already done so, appoint a project director to take responsibility for the next phase.

Outputs Produced from Step 1

1. Current service profile for the Trust.
2. Asset condition surveys.
3. Space utilisation surveys.
4. Equipment utilisation surveys.
5. Analysis of Trust operating economics.
6. Market-based forecast demand scenarios.
7. Appraisals of competitors and the Trust's competitive position.
8. Planned future service profile for the Trust.
9. Indication of purchaser support for change.

Checklist: Setting the Strategic Context

1. Appraise the services currently provided and produce an up-to-date service profile.
2. Evaluate purchasers' requirements, health strategies and objectives.
3. Assess the future demand for health-care services, giving consideration to demographic and other relevant factors.
4. Analyse the market and competitors.
5. Review the strengths and weaknesses of the Trust, and consider the opportunities and threats presented by the market.
6. Link the service volumes that are likely to be demanded with the service facilities that will need to be provided.
7. Match the service facilities that will need to be provided with the capital assets that will be required.
8. Conduct a property appraisal and produce a physical condition survey, a space utilisation study and a breakdown of estate running costs; or conduct an IM&T appraisal and produce a statement of future information needs.
9. Compare the capital assets required with what is currently in place.
10. Identify whether there is a gap between the current capital asset base and what is required – a reasonable case for rejecting a 'do nothing' option.
11. Assess the affordability to purchasers of potential capital investment.
12. Discuss the outcome of the strategic review with the NHS Executive Regional Office to verify the analysis.

Phase II: Outline Business Case

Step 2 Define Objectives and Identify Benefit Criteria

2.1.1 Once the strategic direction for change has been set, objectives must be defined to meet the specific service requirements that have been identified. These objectives provide the basis for:

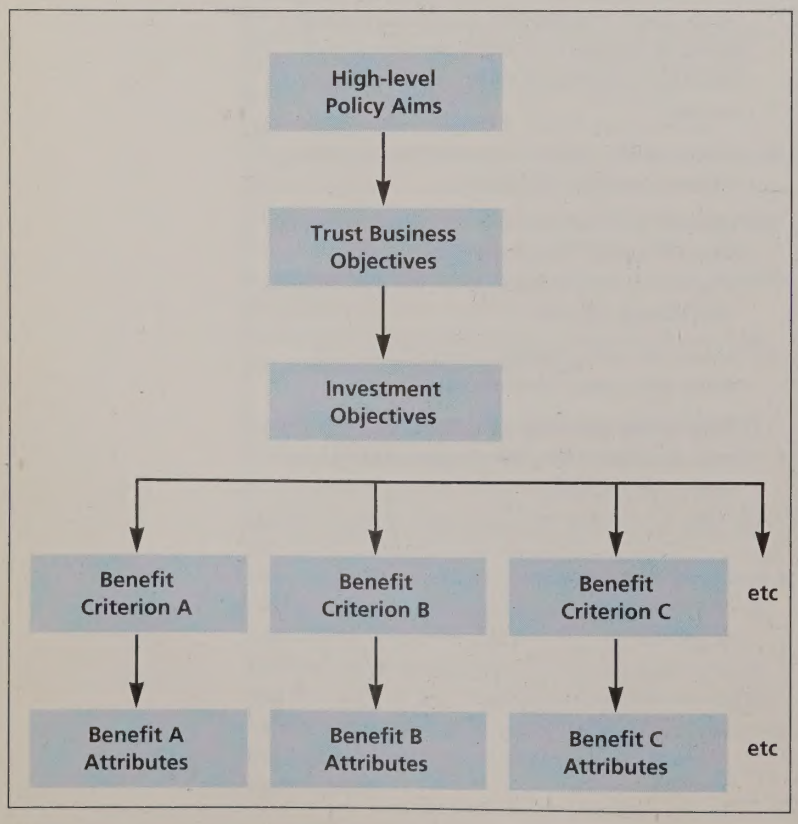
- formulating options for appraisal;
- developing the benefit criteria against which options will be measured; and
- providing criteria by which to judge the success of the investment.

2.1.2 The purpose of a business case is to show that the overall impact of an investment will be beneficial and will maximise the ratio of benefits to costs. A clear statement of objectives and a range of associated benefit criteria are the starting-point for the preparation of a business case, and must be developed before generating options for change.

The Need for Customer-Focused Objectives

2.2.1 A guiding principle is that objectives, and the benefits that flow from attaining them, must be determined by consumer's (i.e., patients') needs, and reflected in purchasers' demands for the range and level of services to be provided. This is generally achieved when objectives concentrate on requirements rather than on the means of accomplishing the result (i.e., on *what* needs to be achieved, not on *how* it is to be achieved).

FIGURE 6 IDENTIFYING BENEFIT CRITERIA (TOP DOWN)



DEFINING OBJECTIVES

2.3.1 Any proposed investment must be consistent with the principal policy aims of the NHS. These generally describe, at a high level, the policies of Department of Health Ministers, purchasers and the NHS Executive. High-level policy aims will take account of some or all of the following:

- Health of the Nation targets for Key Areas;
- Patient's Charters;
- Care in the Community policy;
- Purchasers' stated policy aims;
- NHS Executive objectives; and
- National IM&T strategy

2.3.2 The proposed investment objectives will also need to consider criteria such as the six developed by the Kings Fund:

- Access to services – in terms of location and time (travel and waiting times, etc).
- Relevance to need – for the whole community and appropriate care for the individual.
- Social acceptability – including responsiveness to user views.
- Effectiveness – for individual patients and for the population as a whole.
- Equity – equal treatment for equal need.
- Efficiency – value for money.

2.3.3 Aims and objectives of NHS Trusts should already be clearly stated in existing business plans. If they are customer-focused, they will be aimed at improved delivery of high-quality services and value for money. They might include:

- specified changes in activity;
- improvements in quality of care;
- improvements in the quality and timeliness of information;
- changes in market share for given specialties;
- improvements in patient satisfaction;
- recruitment and retention of well-qualified staff;

- reductions in Trust service costs; and
- maintaining or enhancing the environment for teaching.

2.3.4 However, in the light of a thorough strategic review, Trust objectives might have to be clarified or expanded and given a sharper focus.

INVESTMENT OBJECTIVES

2.4.1 Investment objectives must be set that will contribute to the general business objectives of the Trust. They should relate to outcomes that are sought as a result of any proposed project.

2.4.2 Investment objectives should be SMART: Specific, Measurable, Achievable, Relevant and with a Time element. To ensure this, measures of success may need to be identified alongside each objective. Good objectives use words like 'improve', 'reduce' or 'maintain' and specify quantified targets: for example, to improve by 10% or to increase by a specific amount by a given date.

2.4.3 The following are examples of service objectives:

- To extend the proportion of total general acute activity treated as day cases from 25% to 60% by 2001.
- To improve the quality of the maternity unit to physical condition B or better within five years.
- To reduce energy usage by 15% within five years.
- To reduce facility running costs by 10% within three years.

2.4.4 The following are examples of information-based objectives:

- Make a further 10% of nursing time available to direct care of elderly patients by December.
- Reduce the manual systems used to collect and collate data and cut staff time spent on collecting data by 20% by the end of the year.
- To improve the quality of care provided through a system to locate clinical casenotes and increase the number of consultations that occur with casenotes by 10% within this financial year.
- To extend the scheme which attaches community nurses and health visitors to GP practices so that 90% of all contacts for these groups are with a practice-based member of staff within six months.

2.4.5 Figure 7 shows how the objectives and the activities and resources incurred in achieving them can be linked.

2.4.6 A statement like 'to upgrade the quality of the surgical ward block' is a poor objective as it has no timescale, nor does it identify the standard to which the ward block is to be upgraded (which could be particular mandatory or statutory requirements). Similarly, to improve the quality of information does not of itself constitute an objective. Furthermore, the need for improved environmental quality or improved information should be allied to its use. In this example, the upgrade could be linked to a measurable quantified objective, such as a reduction in infection rates.

2.4.7 Objectives will not usually refer explicitly to a capital project, as the project is only a means to an end; it is not something which is to be achieved for its own sake. It is necessary to guard against making matters such as the location and standard of accommodation, or a new building versus refurbishment, objectives. These will be treated as options rather than objectives at the next stage of developing the business case. Objectives should be sufficiently detailed for the broad service aims to be clear, but not so specific or narrow that they preclude consideration of a range of options.

RANKING

2.5.1 It helps to rank objectives in priority order. The order should usually reflect customer's views, so consultation and discussion should take place with purchasers, DHAs and GPs as well as 'clients', that is patients and the wider community, as part of the strategic review. The ranking of objectives will help with the evaluation of options and, if necessary, the tailoring of proposals to match available finance.

Constraints

2.6.1 Constraints are issues that impact upon objectives and set the bounds for the potential investment. They are often related to financial issues, for example, a maximum capital spend of £5 million, or a limit on the revenue costs of an investment (increasingly likely since the introduction of capital charges).

2.6.2 Constraints may also relate to physical environment, availability of appropriate staff, appropriate timescales or policy commitments. A constraint can often be regarded as part of an objective – as the ceiling within which the desired outcome is to be achieved.

2.6.3 All constraints should be identified and examined to see how rigid they are and whether some flexibility exists. For instance, a financial constraint may suggest that the range of options should include some that employ private finance.

Identifying Benefit Criteria

2.7.1 Benefit criteria are used to select and evaluate the options that will be generated in the next stage of investment appraisal (Step 3). They are derived from the service objectives and constraints developed and described earlier. They may be developed in group discussion involving the business case team, senior Trust managers and

purchasers' representatives.

2.7.2 Benefit criteria fall into three categories:

- benefits which can be quantified financially;
- benefits which can be quantified, but not in financial terms; and
- benefits which cannot easily be quantified.

2.7.3 For example, an investment might result in a reduction in building maintenance (can be put in financial terms), or in reduced travelling times for patients (cannot be easily put in financial terms, but can be measured) or in increased staff morale through a reduction in time spent filling in forms (difficult to quantify).

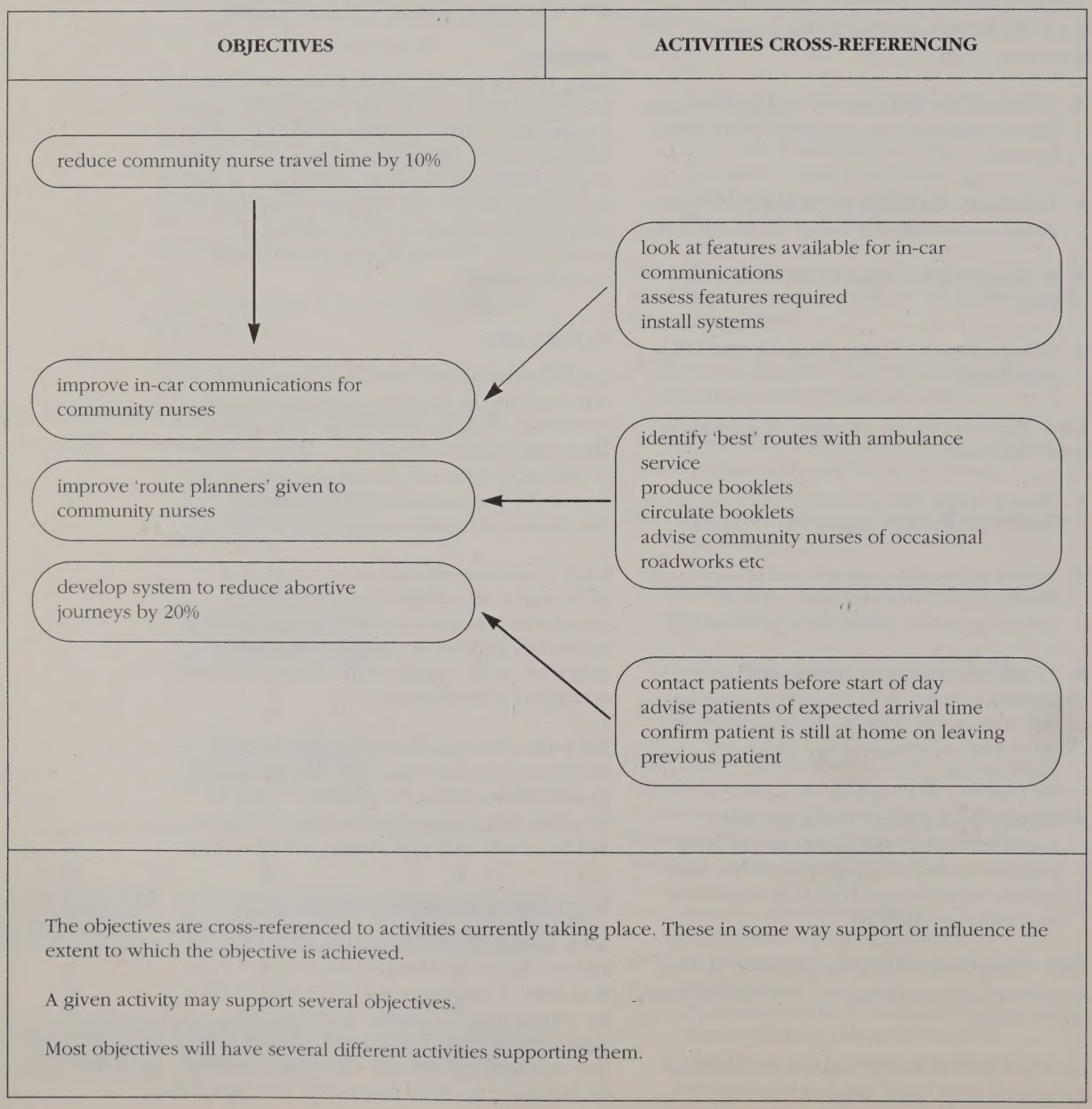
2.7.4 The identification of relevant benefit criteria is a critical step in developing a business case for an IM&T investment. Typical benefit criteria might be grouped as follows:

- clinical quality (direct improvement in the quality of clinical care provided);
- staffing (recruitment and retention of high-quality staff);
- clerical quality (reduced paperwork, resulting in fewer transcription errors and, therefore, better clerical work);
- implementation (ease of implementation and implementation timescales);
- effective communications; and
- competitive advantage.

PROCESS

2.8.1 The aim is to produce a list of between five and ten main benefit criteria. These will be used at later stages to produce a short-list of options. They will then be used in the evaluation of the short-list, resulting in the identification of a preferred option

FIGURE 7 OBJECTIVES AND ACTIVITIES CROSS-REFERENCING



(Steps 4, 6 and 7). Each of the main benefit criteria is described by a list of potential benefits (and possibly disbenefits). A process is required that generates a list of benefits which will be sought from an investment, and then groups these under the heading of the main benefit criteria. Criteria which are often used include quality of care, effectiveness of clinical services, accessibility for patients, staffing factors (for example, recruitment and availability of staff), flexibility, environmental quality or marketability of services.

2.8.2 An approach is to consider the hierarchy of objectives headed by high-level policy aims. The expected and desired benefits of meeting each investment objective are identified by descending from the top through the Trust business objectives. This generates a long list of benefits which are then classified into common groups of main benefit criteria. This 'top-down' process is illustrated in Figure 6 (page 24). As a consequence of the link between the benefit criteria and the objectives, the relative importance of each criterion should be apparent.

COST SAVINGS

2.9.1 Where benefits can be expressed in terms of cost savings, they will be included in the costing analysis of options. Cost saving must not be treated as a benefit criterion, otherwise this aspect of an option will be appraised twice: as a component of both the cost analysis and the benefit analysis.

2.9.2 In practice, it is very difficult to value all benefits in monetary terms; for example, to identify and assess the value realised by reduced ill health in a population. The method more usually adopted is to compare the costs and identifiable cost savings of alternatives alongside judgments of the relative benefits released by each option. This is the approach set out in this guide, and it should be used for all capital investment decisions where both the costs and benefits of various alternatives differ.

2.9.3 Where the aim is to minimise costs for a given level of benefits or to maximise benefits for a given cost, *cost-effectiveness analysis* is used. This method accordingly concentrates on one of the two aspects, costs or benefits, and appropriate techniques described in this guide applying to each of these aspects must also be used. (Steps 4 and 6 applying to benefit analysis, or Step 5 applying to cost analysis.)

2.9.4 A third type of appraisal is *financial appraisal.* This measures benefits simply by analysing the income generated from the excess of receipts (from sales or charges) over costs. Except for activities which Trusts run as commercial ventures, it is an inappropriate method of appraisal. Nevertheless, a check is required that income will cover costs, so that Trusts fulfil their financial duties.

2.9.5 In the future, however, as the market for health care services develops, the financial value that purchasers place on the services provided may represent the value of benefits. Provided that the price paid by purchasers for the benefits received can then be justified in terms of the net social benefits that they provide, financial appraisal may become a suitable method of assessment.

Outputs Produced from Step 2

1. Statement of objectives for the investment.
2. List of benefits which the investment will seek to obtain.
3. Benefit criteria for the selection and evaluation of options.
4. Decision on the type of investment appraisal method to employ.

Checklist: Defining Objectives and Identifying Benefit Criteria

1. Identify the high-level policy aims for the Trust.
2. Identify and review the Trust business aims and objectives.
3. Formulate objectives for the capital investment strategy that are SMART (specific, measurable, achievable, relevant and time-linked).
4. Check that the chosen objectives concentrate on results rather than the means of achieving them.
5. Rank objectives in customer's order of priority.
6. Identify the benefits that will be realised by meeting the objectives set for capital investment.
7. Classify the benefits into groups of benefit criteria.

Step 3 Generate Options

2.10.1 The purpose of this step in the process is to identify as wide a range as possible of options available to meet the objectives identified in Step 2, which will provide the identified benefits. The list of possible options should include non-capital options, as well as options involving capital investment, including those that use private finance. A basis for comparison will also be required (the 'do nothing' or 'do minimum' option). It is recommended that, following the completion of this step, short-listed options are reviewed with the NHS Executive Regional Office before proceeding to the next step.

OPTION GENERATION PROCESS

2.11.1 Option generation involves two main stages: conceiving a long list of possibilities by reference to the investment objectives, followed by refinement to produce a short-list.

CONCEIVING OPTIONS

2.12.1 The drawing up of a long list of possibilities will usually require consultation of a range of people within the Trust and more widely. The generation of options provides an opportunity to be creative and innovative, to challenge constraints, and to revisit the objectives of the investment. In order to reflect a wide range of views, purchasers and other outsiders, including the private sector where appropriate, as well as managerial, professional, clinical and teaching staff from the Trust should be involved.

2.12.2 Brain-storming sessions with an experienced panel can be helpful to generate a large number of initial ideas. Points to remember at this conceptual stage are:

- Be imaginative: include radical and minimal options.
- Do not be critical too soon: options should not be eliminated until all the ideas have been gathered.
- Set a high target number for ideas – and exceed it.
- Challenge assumed standards and constraints.
- Do not be fixed by what seems feasible and viable; sifting takes place later.
- Revisit the objectives of the investment: they may need reformulating.

LONG LIST

2.13.1 It is likely that brainstorming sessions will generate a large number of ideas for options. When analysis of options begins, it may be apparent that many of the ideas duplicate others or are not feasible. Through a process of analysis and identification of duplication and common characteristics, it should be possible to reduce all the ideas to a 'long list' of, say, 10 or 12 options, each with a number of sub-options. The long list should include a wide range of solutions:

- a base option ('do nothing' or 'do minimum');
- non-capital solutions, such as:

  (a) buying in services from elsewhere;
  (b) getting the private sector to provide services under contract;
  (c) delivering services away from the main hospital site;

- options to refurbish existing facilities, short of major upgrading:

  (a) building/systems repair;
  (b) replacement of plant and equipment;

- options to make better use of existing facilities by adaptation or re-arrangement;
- rationalisation options which release savings from land sales or running cost reductions and help to reduce backlog maintenance;
- options to upgrade or adapt the existing stock/information system;
- joint venture solutions and other ways of using private sector capital;
- new building options on the existing site – although large, inflexible schemes are discouraged;
- total replacement of existing information system to provide an integrated networked system, e.g. Hospital Information Support Systems (HISS); and
- a radical solution, such as total replacement on a green-field site.

2.13.2 Each long-list option should be briefly described in terms of what it would entail and the service requirements it would meet. It will be sufficient to record the details in two or three paragraphs. It is important to be able to document the full list of options which were considered. This is to demonstrate the process applied and its objectivity.

SHORTLIST

2.14.1 The long list of options generated will need to be reduced for full evaluation to a number that provides real choice but is manageable; at least three options, and six at the most, are recommended. This can be done by drawing on the benefit criteria derived in Step 2 and applying the most important criteria to the options. Some options may be impractical or infeasible; for instance, a green-field option where a site search produces no suitable locations (a constraint). Non-capital solutions should be given equal attention in the sifting process.

2.14.2 When considering an investment in IM&T, it may be necessary to gain a basic understanding of the features of the relevant IM&T market. This may be required in order to establish that there are potential IM&T solutions available that would match the organisation's business needs.

2.14.3 Although the costs of options will not have not been explicitly identified at this stage, it should be possible to sift the long list and eliminate options which are clearly unaffordable or which, when compared with another option, can be identified as inferior. Inferiority is demonstrated either in terms of fewer benefits delivered at higher or equal cost, or the same level of benefit delivered at a higher cost.

2.14.4 Also, when options are similar, in that they provide comparable benefits by the same method, a single, representative option should be identified and used in subsequent stages of analysis. This will ensure that the evaluation contains a full cross-section of options which deliver benefits.

2.14.5 Options which are chosen at this stage will then undergo formal cost-benefit analysis (Steps 4 to 7 below). The reasons for discarding options should be recorded. The basis for short-listing options should reflect purchasers' preferences and may be discussed with the NHS Executive Regional Office.

The 'Do Nothing' or 'Do Minimum' Option: The Baseline

2.15.1 The 'do nothing' or a 'do minimum' option should be retained as a baseline in the shortlist since the implications of doing nothing must be assessed. It may be that a 'do nothing' option is not acceptable, or possible. However, the 'do minimum' option must then be included as a baseline so that the extra benefit and costs of other options can be measured against it. This will involve understanding the cost of merely maintaining the current level of service, over the full lifetime of the proposed project. The effect of doing nothing might be that the life of the option is limited.

2.15.2 Significant resource input may be required just to maintain the status quo: that is, doing the minimum. Buildings or plant may have come to the end of their useful life and may require replacement or upgrading. If the throughput of patients is increasing, maintaining the service provision may take additional costs in staff, energy and other running expenditures.

Describing the Short-listed Options

2.16.1 For the Outline Business Case (Phase II), short-listed options should be described in sufficient detail for the benefits and costs to be understood and assessed in Steps 4 and 5. They should, therefore, include factors such as:

- intended outcomes (objectives: health gain, etc);
- expected workloads and throughput (in-patients, day cases, out-patients, etc);
- functional content (beds by specialty, support services);
- accessibility (for patients, staff, visitors, etc);
- staffing consequences (increases, reductions, etc);
- phasing (and interim impact on services);
- implications for the estate (future developments, land sales, etc);
- effects on other services (following implementation);
- flexibility to accommodate changes in circumstances;
- expected impact on performance indicators; and
- impact on financial performance.

REVIEWING THE OPTIONS

2.17.1 The generation of a short-list of options is a significant point in the business case process. Before proceeding further, it is recommended that the shortlist of options is discussed with the NHSE outpost and main purchasers with the aims of:

- confirming the objectives and benefits identified in Step 2;
- verifying the choice of options against these objectives and benefits;
- ensuring that no tenable options have been eliminated; and
- avoiding abortive work on the next steps which are to analyse costs and benefits (Steps 4 to 6).

Checklist: Generating Options

1. 'Brainstorm' to produce a wide range of initial ideas for meeting the objectives.
2. Consider minimal, non-capital, private finance, radical and imaginative options.
3. Coarse sift the ideas to produce a long list of possibilities.
4. Ensure that the long list includes a wide range of options, including 'do nothing' or 'do minimum' choices.
5. Briefly describe each of the long-list options; document these and the process used to arrive at them.
6. Sift the long list to reject options that are not feasible, unaffordable and which do not meet the benefit criteria.
7. Aim for at least three options on the short list; keep a 'do nothing' or 'do minimum' option on the short list.
8. Ensure that the short-listed options are consistent with investment aims and objectives.
9. Produce descriptions of the short-listed options in sufficient detail for a cost-benefit analysis.
10. Consult the NHS Executive Regional Office on the choices that have been made.

Outputs Produced from Step 3

1. A long list of options which support the Trust in meeting its business objectives and are consistent with the objectives of the investment; some options might be non-capital solutions, and others might use private sector capital.
2. Documentation of the long list of options.
3. An analysis supporting the short-listing of options identifying those rejected because of identified constraints, inferiority or poor match with benefit criteria.
4. A short-list of options that are considered acceptable and feasible for cost benefit analysis.

Step 4 Measure the Benefits

2.18.1 Measurment of the benefits of the options short-listed in Step 3 uses the benefit criteria identified in Step 2. This section describes an approach to evaluating benefits in order to rank options from best to worst. This step is conducted before selecting a preferred option. The aim is to identify non-financial benefits of each option to be matched against option costs (see Step 5).

Measuring the Benefits

2.19.1 Where possible all benefits should be quantified. Benefits which can be quantified financially (e.g. cost savings) should be included in the cost analysis of options (Step 5). In this step, the evaluation of benefits focuses upon the non-financial benefits of options. These can be of particular importance when considering investments in IM&T. Appendix 3 describes the types of and methods for measuring such benefits.

2.19.2 The benefits that will be obtained from each option should be assessed using the benefit criteria identified in Step 2. The construction of weighted benefit scores is preferable to, and more robust than, simply ranking options. Even if carefully identified benefit criteria are used by an evaluation team to judge the order of merit, the process is weak because it gives no clear measure of the degree to which one option is better than another. The process of weighting and scoring options described below is more helpful, and Full Business Cases (Step 9) will be expected to record the results of such an exercise.

WEIGHTING AND SCORING OF BENEFITS BY OPTION

2.20.1 There are a number of alternative ways of identifying weights for benefit criteria. The recommended approach to scoring options and weighting benefit criteria is to involve people with a broad range of representative views. These will include members of the business case project team and other interested parties, and include, where appropriate, representatives from purchasers. It is also important to have some independent participants who can help to ensure that decisions are as objective as possible and not biased by preference for a particular solution. Objectivity is also enhanced by separating the exercises of scoring the options from that of weighting the benefit criteria.

2.20.2 Scoring and weighting are best performed by the representatives in a workshop session. Alternative ways of identifying scores and weights, such as using questionnaires, are likely to be less successful. The workshop will ensure that:

- there is common understanding of the definition of each option;
- there is common understanding of the definition of each of the benefit criteria;
- a variety of views are expressed about the relative importance of the benefit criteria;
- any differences in opinions related to weights for benefit criteria are identified and recorded; and
- at the end of the process there is agreement to the weights assigned to criteria.

Weighting the Criteria

2.21.1 The following approach is recommended:

1. Having scored each of the options against each of the benefit criteria, establish the relative importance of each criterion. This is done by estimating a weighting for each criterion.

2. This is simplified if the benefit criteria are first given a relative ranking. The most important criterion is ranked the highest and given weight of 100.

3. Each of the other criteria is then examined against the most important criterion. This is performed by carrying out a series of 'pairwise comparisons'.

4. A pairwise comparison consists of selecting another criterion and deciding how much less important that criterion is than the most important criterion.

5. For example, if the first criterion is assigned a weight of 100, and the second criterion is considered to be half as important, then a weight of 50 is assigned to the second criterion.

6. Steps 3 to 5 are then repeated for each successive pair of criteria, until each has been weighted (i.e., the first and second criteria, then the second and third, and so on).

7. The weights for each criterion are then scaled to total 100 and recorded.

Scoring of Options against Benefit Criteria

2.22.1 The following practical approach is recommended for scoring options on each of the benefit criteria in a workshop session:

- Each option is examined in turn against each of the benefit criteria. A brief description of how that option meets the criterion is agreed upon. Options are not scored at this stage.

- Each of the options is then scored, for example, between 0 and 10, on each of the criteria. The descriptions agreed upon above should make this process considerably easier. Although it can be difficult to agree on exact scores, it is usually easy to rank the options in order. The better the option performs, the higher the score that should be awarded. The scores, and the reasons for the scores, should be recorded.

2.22.2 It is important to remember that the scoring of options is not an exact science, but an opinion of the practical benefits that will be received from the implementation of each of the options.

Timing

2.23.1 Some options may bring benefits sooner than others. The evaluation team will have to assess whether the timing of benefits is an important factor. Timing can be handled as a benefit criterion and treated like other benefit attributes: that is, given a weight and then each option scored according to when the benefits would be released. A more sophisticated method could be to set out the time profile of benefit scores for each option, weight the scores according to when the benefits are released, and calculate a time-weighted average.

Evaluation

2.24.1 Having assigned weights and scores to each option, the figures should then be multiplied together to provide a total weighted score for each option. Table 4 gives the type of format in which weighted scores can be calculated and recorded, and has been completed with details of an example. It should now be possible to rank options in terms of benefits and to identify a preferred option on the basis of benefits only.

Recording the Result

2.25.1 The process and reasoning behind the scores and weights must be clearly documented to demonstrate that a plausible analysis has been carried out, that is consistent with the major investment goals and benefit criteria. It is important to recognise that the assigned weights, and the scores given to options, are value judgments. In order to assign weights and scores, negotiation and compromise needs to take place. It is the number of people involved in the process and their expertise that lends credibility to these value judgments.

BASELINE BENEFIT LEVELS

2.26.1 For the (non-financial) benefits identified in Step 2, it will be necessary to identify the current position (or baseline). This is essential so that benefits realisation plans can be drawn up and measures for success included for each of the anticipated benefits related to the preferred option (Step 9).

Outputs Produced from Step 4

1. Identification of weights for benefit criteria.
2. Identification of scores for each criterion for each option.
3. Total weighted scores for options.
4. Current level of benefits achieved/baseline.
5. A preferred 'benefits' option.

Checklist: Measuring the Benefits

1. Confirm the benefit criteria (attributes) that will be used to rank options.
2. Select an expert and representative team to weight and score the benefits of each short-listed option.
3. Give a weight (0 to 100) to each benefit criterion.
4. Give a score (1 to 10) to each option on each of the benefit criteria.
5. Multiply weights and scores to provide a total weighted score for each option.
6. Rank options in terms of benefits and identify the preferred option on the basis of benefits.

TABLE 4 CALCULATION OF WEIGHTED SCORES

REFERENCE	BENEFIT CRITERIA TITLES	BENEFIT CRITERIA WEIGHTS	OPTION A		OPTION B		OPTION C		OPTION D	
			SCORE	WEIGHT x score	SCORE	WEIGHT x score	SCORE	WEIGHT x score	SCORE	WEIGHT x score
1.	Quality of clinical care	30	0	0	0	0	7	210	10	300
2.	Accessibility	15	0	0	1	15	4	60	10	150
3.	Flexibility of accommodation for alternative use	20	0	0	4	80	6	120	9	180
4.	Quality of physical environment	20	0	0	5	100	4	80	3	60
5.	Acceptability	15	0	0	0	0	3	45	7	105
TOTAL		100		0		195		515		795

Step 5 Identify and Quantify the Costs

2.27.1 The aim of this step of the business case process is to identify the total net cost of the options relating to the planned investment. This requires estimates to be made of:

- capital costs of new investment;
- revenue costs of running the Trust;
- opportunity costs of resources already owned;
- costs related to changing the work and practices of the organisation;
- consequential costs borne by others.

2.27.2 The accuracy of the costing should be sufficient to distinguish between each option. It is usual to find that the impact of running costs is as important as capital costs in assessing the costs of schemes. In order to conduct a proper investment appraisal, discounted cash flow (DCF) techniques must be employed.

Costing Principles

2.28.1 Each short-listed option, beginning with the 'do nothing' or 'do minimum' option, needs to have the associated costs, and cost savings, identified and quantified. Treatment of each option must be consistent, and important costs must not be omitted.

BASELINE COST

2.29.1 The total cost of the 'do nothing' option is the baseline for comparison of the cost of the other options. The baseline cost will normally be the cost of extrapolating the present running costs of the Trust into the future on the assumption that the existing estate remains and is maintained in its present condition.

COST ESTIMATION

2.30.1 The following paragraphs give guidance on certain basic principles that should be adhered to in the costings.

Sign Convention

2.31.1 For the purposes of capital investment appraisal in the NHS, all costs are to be treated as positive numbers. Hence receipts, from property sales or commercial arrangements (e.g., from leasing retail space), and cost savings are treated as negative amounts.

Base Year

2.32.1 All cost estimates must be stated in the same base year at a common price level. The base year should be the same for all options. The base year is defined as Year 0.

Inflation

2.33.1 Adopting a base year for cost estimates means that the effect of price inflation on costs incurred in future years can be excluded. This means that if a unit of input costs £x this year and its cost is expected to rise in line with general inflation (i.e., the retail price index), then the same figure, £x, is used as the cost in future years. The Health Services Prices Index (HSPI) gives an indication of trends in input costs.

2.33.2 However, where inflation is expected to affect costs differentially, the effect of this should be included in costings. So if an input is expected to rise in price by, say, 2% a year more than the RPI, then the real price needs to be used in the estimate. (In this purely illustrative example, the real price in, say, two years' time would be the current price multiplied by (1.02 x 1.02). Since real future price trends are always uncertain they should be examined as part of the sensitivity analysis (Step 6).

Sunk Costs

2.34.1 Sunk costs are expenditures that have already been incurred or irrevocably committed. Examples would be planning and design costs for previous, unsuccessful investment appraisals. They should be ignored in economic appraisals.

Opportunity Costs

2.35.1 Investment appraisal looks at costs that will be incurred in the future. However, this includes the cost of continuing to tie up resources which have already been paid for but which could be employed elsewhere. If an asset already owned, such as land, a building or equipment, used in an option has a market value, it is not a sunk cost, but represents an opportunity cost, since it could be sold. For example, if an option involves building on a piece of land which is already owned by the Trust, and has a market value if sold for an alternative use of, say, £2 million, then that amount must be included in the appraisal as a cost.

Marginal, Average and Semi-fixed Costs

2.36.1 If levels of output vary between options, the total costs incurred must be used in the costing, and in determining them it can be helpful to distinguish in a given situation whether the differences in running costs are marginal. Central guidance, such as information on standards for costing published by the National Steering Group on Costing (FDL(92)74), will be helpful here.

2.36.2 Marginal cost is the extra cost of producing one extra unit of output and is usually related to variable costs which tend to change in proportion to the level of activity. Average cost is the total cost of all the resources employed divided by the number of outputs produced. For many activities, a change in volume results in an increase or decrease in average costs, and total costs do not change in proportion to their existing level: they are said to be semi-fixed.

2.36.3 For example, the marginal cost of a diagnostic procedure conducted on a single patient might just be the relatively small cost of the medical supplies consumed and electricity used for the equipment involved. If the staffing levels do

not need to be increased, then labour costs are not included in the marginal cost. In this example, the marginal cost is small and is less than the average cost of the procedure. However, if resources were already fully used the marginal cost of conducting the procedure on one more patient would include the cost of additional staff members, and the marginal cost would be greater than the average cost.

Full-life Costs

2.37.1 In calculating the total costs of options, costs e.g. the ongoing running costs such as maintenance and staffing, should be included. Maintenance costs tend to rise in real terms as premises or equipment get older and this is a factor which needs to be considered in the comparison of options.

2.37.2 In investment appraisals over a long period, assets may require replacement or refurbishment, and it is important not to omit these costs from the cash flow projections.

Phasing of Costs

2.38.1 The phasing of capital expenditure on land, buildings, fees and equipment must be identified and allocated to the year in which the cash expenditure will actually be incurred. Similarly, the timing of receipts from any sales of land, building or equipment must be ascertained. The phasing of costs has an impact on the cash flow of each option. This has implications for the discounting of options, affordability and prices.

Residual Values

2.39.1 In some appraisals of investment options the period of the appraisal will be less than the economic life of the property involved. The economic life is the period up to the point when major refurbishment is required for the asset to continue in use. In these cases, the value of an asset which has a disposal value at the end of the appraisal period should be accounted for by subtracting its residual value from the cash flow in the final year of the appraisal. The residual value can be taken as the lower of net asset value after deducting accumulated depreciation or expected market value.

Capital Charges

2.40.1 Capital charges – depreciation plus a required return on net assets – should not be included in the analysis of the discounted cash flow. The discounting technique (see paragraphs 2.49.1-2.49.3) already includes the capital costs of the project, so adding capital charges would lead to double counting. However, capital charges do affect Trust prices and, therefore, have to be considered in establishing the affordability of the investment to purchasers.

Wider Effects

2.41.1 The wider, consequential effects of options must be considered and included. These may be cost increases or decreases borne by other parts of the NHS, government, university or the public. Examples are: journey times (an opportunity cost for patients and visitors and a cause of actual cost to ambulance services), infrastructure improvements (e.g., the cost of building new or improved roads), environmental changes (e.g., the loss or gain from a change in land use or visual amenity). Where it is not possible to place a monetary value on these aspects, they should be appraised as one of the benefit criteria in Step 4.

CAPITAL COSTS

2.42.1 The main elements which make up capital costs (and opportunity costs of existing assets) can be categorised as:

- Land;
- Hardware;
- Works costs;
- On-costs;
- Fees;
- Equipment (e.g. wiring and furniture, fittings and lighting).

2.42.2 Table 5 gives a list of the main items that these cost categories comprise with regard to property appraisals.

2.42.3 Table 6 gives a list of the possible costs that may be associated with a large IM&T investment.

2.42.4 For Outline Business Cases (Phase II), outline new building designs or provisional plans for upgrading/adaptation may be needed and require some experienced or professional assistance to prepare. Estimates of capital costs based on industry norms or standard costs (e.g. departmental cost allowances plus percentage on-costs) will normally suffice, unless the characteristics of the option are unusual or, in the case of new building, there are clear reasons why a standard design (e.g. Nucleus) will not be used.

2.42.5 For new building options, the functions to be accommodated provide a starting-point for estimating a core capital cost (numbers of beds, theatres and other major diagnostic and treatment facilities). Similarly, for IM&T investments, the required functionality of the proposed system will provide an indication of the likely capital cost. For upgrading and adaptation of existing facilities capital costs will depend on the condition and suitability of existing buildings and information systems, and on the extent of work necessary to meet the service objectives of the investment proposal.

Value Added Tax

2.43.1 In an economic investment appraisal of public expenditure, Value Added Tax (VAT) is not a true cost, but a transfer of money from one point to another. Hence, VAT should not be included in the discounted cash flow analysis of the investment appraisal.

2.43.2 However, when VAT cannot be recovered by NHS Trusts, it is a real cash cost with an effect on Trust finances and prices to purchasers.

TABLE 5 CAPITAL COSTS FOR PROPERTY APPRAISALS

Type of Capital Cost	Source of cost data
Land	
Purchase price of new land Opportunity cost of land already owned (Cash released from land sales)	Local market information, estate surveyors.
Property	
Opportunity cost in next best use Refurbishment (building repair and equipment replacement) Upgrading and adaptation works	Local market information, estate surveyors, Inland Revenue District Valuer.
Construction – New Build	
Works costs: – Preliminary and enabling works site preparation and demolition; – Internal building and engineering works; – Plant and equipment normally provided and installed in a building. Specific on-costs: – Communication space and lifts; – External building works (drainage, roads, landscaping, etc); – External engineering works (for utilities and ancillary services, etc); – Auxiliary buildings.	Departmental cost allowances, NHS Estates
Professional Fees	
Commissioned and directly provided services for planning, design execution of schemes and the purchase/disposal of property: – Architects; – Engineers; – Estate surveyors; – Quantity surveyors; – Project managers; – Other specialist professional and managerial fees.	
Equipment	
Costs of new equipment supplied by the health authority (Groups 2 to 4) Installation costs Second-hand values of transferred equipment	Equipment Cost Allocation Guide, NHS Estates

Therefore, when Trusts are assessing the affordability of options, VAT that is paid and not recovered should be included: for instance, in the calculation of capital charges. VAT should also be included when summarising the total cost of a capital investment.

REVENUE COSTS

2.44.1 Revenue, or running, costs must be fully included in an appraisal. These recurring costs are at least as important as capital costs, and it must not be assumed that they will not change from the base 'do nothing' option. For Outline Business Cases, assessments of revenue cost estimates must:

- assume that the running costs of each option will normally be different and distinguish between them;
- explain the differences in running costs between options;
- include all running costs; and
- state the assumptions made (e.g. about service performance, efficiency savings, real cost trends).

2.44.2 For the purposes of business planning and monitoring, Trusts may already have developed cost models linking service volumes to the main cost components of the service. Table 7 gives a list of some of the factors that such a cost model might contain. These models can be used, possibly with adaptation, to project the running costs of various options. More than one method might be used to corroborate running cost methods. Other suggested methods for deriving cost estimates for each option are:

- Adjusting the baseline: Consider, for each option, which revenue cost components will vary from the baseline, assess the causes of difference and the likely extent of cost increases or savings, and calculate by how much each main component of the baseline cost should be adjusted.
- Full cost build-up: Prepare a detailed assessment of the main cost components (e.g. medical staff, nursing staff, pharmacy, catering, pathology, etc.) for each short-listed option. This will necessitate consultation with the managers responsible for each component.
- Comparative costing: Base the estimate on the costs of the most comparable units or equivalent services to each of the short-listed options. Adjustments will have to be made to allow for any important differences between the option and the comparator (such as activity levels, specialty mix, energy efficiency).

TABLE 6 CAPITAL COSTS FOR IM&T INVESTMENTS

Type of Capital Cost
Project Structure
Team Accommodation
Office Expenses
Preparation of Statement of Need – users, staff and materials
External Consultancy
Preparing and Negotiating Contracts
Equipment
Hard and Software Procurement and Installation
Furniture, Fittings and Lighting
Wiring and Communications Equipment
Staffing
IT and Support Staff
Trainers
Project Staff
Recruitment
Redundancy Payments
Ongoing
System, Operation and Network Management
Bureau Services
In-house Maintenance
Licences: Application and Operating System
Hardware Maintenance
Upgrades
Revisions
New Programmes
Contingency, Disaster Recovery Costs
Insurance
Consumables
Organisational
Changes in Organisational Structure
Consultancy
Strategy Work
Training
Dual Systems During Implementation
Building and Power
Floor Space
Ventilation and Heating
Structural Alterations

2.44.3 The amount of effort put into deriving revenue estimates for Outline Business Cases should be commensurate with the overall capital cost of the proposal. It will be expected that they will be as comprehensive as possible, but if broad-brush assumptions have to be made, sensitivity tests (Step 6) must realistically reflect the likely degree of accuracy.

2.44.4 Revenue cost models (Table 7) constructed on a computer, for example using spreadsheet software, can provide one module of a full capital project investment model. By combining revenue cost modules onto a spreadsheet with capital cost modules, cash flow projections can be produced. Discounted cash flow calculations (Table 8) can then be readily made using standard spreadsheet functions.

Transition Costs

2.45.1 Some options may involve the transfer of service facilities between and within hospitals and other health buildings. These transfers will result in additional costs (including perhaps capital) and these should be taken into account in comparing the relative costs of the options.

Displaced/Avoided Costs

2.46.1 Displaced/avoided costs are current costs that will no longer be incurred once the new system has been implemented. These have traditionally been included in the evaluation of IM&T investments. However, the extent to which such costs are relevant today, where most organisations will already have some form of IM&T, is very limited. Care must be taken to avoid double counting these costs. Avoided/displaced costs common to all options should normally be included in the 'do minimum' and therefore should not be included elsewhere.

Appraisal Period

2.47.1 The period of appraisal should normally equate to the intended period of use of the asset. This is the period over which it can be used for the specific purpose that it has been provided for. For

hospital buildings this will normally be the remaining physical life of the building; conventionally this is assumed to be 60 years. During such a lifetime, a building will need to be refurbished periodically to maintain its use, and the associated costs must be included in the appraisal. However, where building type, design or location may allow the building to have some alternative use and a market is likely to exist for the property, the appraisal period can be shorter. This period may be no more than 20 to 30 years, equating to the expected period of foreseeable use. For information systems, the conventional written-down economic life is eight years.

Discounting

2.48.1 A technique called discounting should be

TABLE 7 COMPONENTS OF A REVENUE COST MODEL

Key demand drivers
Number of in-patients

Number of out-patients

Number of day cases

Completed consultant episodes

Key component factors
Length of stay per patient

Mix of specialties

Mix of staff skill/grade/number

Performance indicators:

- productivity
- efficiency

Hospital size (bed numbers)

Operational staffing policies

Teaching status

Location (Inner city/suburban, London/provincial)

Estate characteristics:

- building design;
- building layout and form;
- accessibility;
- number of sites;
- age of buildings;
- size;
- energy efficiency.

Key resource inputs
Service staff costs:

- Medical;
- Nursing;
- Support (pharmacy, pathology, etc);
- Ancillary (portering, security, etc.

Management and administrative staff costs

Service costs:

- consumables
- equipment maintenance.

Estate costs:

- building maintenance (upkeep, repair, etc);
- grounds maintenance;
- local authority business rates;
- energy consumption;
- rental/lease charges;
- estate management.

Contract services:

- catering;
- laundry;
- cleaning.

TABLE 8 DISCOUNTED CASH FLOW

£ millions	YEAR							
	0	**1**	**2**	**3**	**4**	**5**		6 to 60
Capital costs								
Departmental cost	5.0	5.0	5.0	5.0	5.0			
On-costs	1.0	1.0	1.0	1.0	1.0			
Fees	0.5	0.5	0.5	0.5	0.5			
Equipment					3.0			
Total capital cost	6.5	6.5	6.5	6.5	9.5			
Land sales						-1.0		
Revenue costs:								
Staff	20.0	20.0	20.0	20.0	20.0	20.0		19.0
Administration	1.0	1.0	1.0	1.0	1.0	1.0		1.0
Maintenance	3.0	3.0	3.0	3.0	3.0	2.0		2.0
Total revenue costs	24.0	24.0	24.0	24.0	24.0	23.0		22.0
Net Total Cash Flow	30.5	30.5	30.5	30.5	33.5	22.0		22.0
Discount Factors at 6%	1.00	0.94	0.89	0.84	0.79	0.75		11.95*
Net Present Cost = 417.8	30.5	28.7	27.1	25.6	26.5	16.5		262.9

*Sum of the discount factors for years 6 to 60

applied to take account of the potentially different timing of options and opportunity costs of resources, so that more weight is given to earlier costs than to later costs. This reflects the fact that it is preferable to pay costs later rather than sooner, and receive benefits sooner rather than later. The sum of discounted costs and benefits is called the *net present value* (NPV). For assets with a long useful life expectancy discounting the costs and benefits will be particularly important; £100 million has an NPV of £5.43 million over 50 years, using a 6% discount rate.

2.48.2 Appendix 3 provides information on discounted cash flow techniques used to compare option costs, including a worked example of discounting. The final cost analysis must be discounted at the appropriate real rate, currently 6% to give its present value. Capital and revenue expenditure may be shown separately, as in the illustrative example below, but are added together to calculate a *net present cost* (NPC) for total expenditure. A different rate should be used when considering lease options. The appropriate discount rate in such cases is normally the National Loans Fund (NLF) interest rate +2%. Further details are given in the *Private Finance Guide.*

2.48.3 If it were possible to accurately value all costs and benefits on the basis of the discounting exercise the option with the highest net present value would be preferred. However, if, as is more usually the case in appraising NHS options, it is not feasible to place a monetary value on some benefits (which might nevertheless be significant in terms of the criteria established in Step 2), the preferred option would be the one that achieved a set of objectives at least cost, i.e. the option with the lowest net present cost.

AFFORDABILITY

2.49.1 At this stage, when the cash flows for each option have been calculated and set out, the Trust needs to consider the following questions:

- Is the preferred (least cost) option affordable?
- What will the impact be on prices to purchasers?

2.49.2 Often a capital ceiling will have been identified and it will be evident that the preferred option cannot be afforded because it will exceed the ceiling for funds that are likely to be available. Where affordability cannot be demonstrated, it will be necessary to revisit the costs identified in options and consider opportunities for cost reduction: for example, by phasing the preferred option differently, adopting a different design concept, or altering the mix of upgrading/adaptation/new build. If the project is still deemed to be unaffordable, then it will be necessary to reconsider the objectives of the investment and the content of the options.

Impact on Prices

2.50.1 Once the evaluation has assessed the total and discounted cash costs of options, it will be necessary to examine whether the investment can be afforded by purchasers. In general, investments will be difficult to justify if they increase the revenue costs of the Trust, and hence prices to purchasers. Here the effect of capital charges must be considered. Capital investment will result in increased depreciation charges and the need to realise a return on the new assets which will be reflected in increased capital charges.

Outputs Produced from Step 5

1. Identification of existing costs.
2. Identification and valuation of capital costs of each option.
3. Identification and valuation of running costs of each option.
4. Calculation of capital and running costs of each option.
5. Documented description of the cash flow projections of each option.
6. Affordability of options.
7. A least-cost option.

Checklist: Identifying and Quantifying the Costs

1. Identify the total costs of the baseline – the 'do nothing' or 'do minimum' option.
2. Identify all the capital (non-recurring) costs for each option.
3. Identify all the revenue (running) costs for each option.
4. Check that all costs are at base-year (Year 0) price levels (constant prices).
5. Adjust any future costs that will rise or fall in real terms by an appropriate cost index.
6. Develop a costing methodology (e.g., a cost model) to project forecasts of future running costs.
7. Combine revenue and capital cost projections to produce forecasts of project cash flows.
8. Subtract capital charges and VAT (where this is material) from all costs before evaluating the discounted cash flows.
9. Discount the cash flows using the appropriate discount rate to calculate the net present cost of each option.
10. Rank options by their net present costs to identify the preferred option on the basis of costs.
11. Record the results, ensuring that assumptions are documented.

Step 6 Assess Sensitivity to Risk

2.51.1 By this stage, preferred options in terms of benefits and costs will have been identified in Steps 4 and 5, respectively. A number of assumptions will have been made in assigning costs and benefits which, because they concern uncertain future events, must be tested. Sensitivity analysis is the step in the investment appraisal process which aims to examine the robustness of the ranking of options. The most robust options are those which, even if the assumptions upon which they are based turn out to be different, deliver the same benefits with the least variation in projected costs.

Analysing Risk

2.52.1 Risk arises from the possibility of more than one outcome occurring, with the likelihood that something will not turn out as planned or expected. The major categories of risk to be considered in NHS capital investment appraisals are:

- Uncertainty: The projected costs and benefits of an option will always be subject to some uncertainty. Assumptions made, such as on building on-costs, the scope for future efficiency savings or the precise level of future demand, are normally indeterminate, and particularly so at the Outline Business Case phase.

- Optimistic Bias: When the possibility that something will turn out differently is not fully allowed for, optimistic bias occurs. For example, if the most likely cost of an option is reckoned to be £20 million, but there is a one-in-four chance that it will be £24 million, then it is probable that the expected out-turn would be £21 million (£20m x 0.75 plus £24m x 0.25). In this case the 'best estimate' (£20 million) is less than the predicted out-turn, and the estimate is optimistically biased.

- Variability: Where the range of possible out-turns of an option is wide, it is subject to variable risk. The range of variability may be different between options under consideration, and adverse outcomes may fall more heavily on some areas of the Trust's activities than on others and seriously affect particular groups of individuals.

2.52.2 A variety of techniques and methods can be employed to analyse and quantify the risks associated with uncertainty, optimistic bias and variability. They vary in the level of technical sophistication required and in the amount of data necessary to use the techniques.

SENSIVITY TESTING

2.53.1 Sensitivity testing is an approach commonly used to assess the degree of risk in of investment proposals. Its purpose is to understand how sensitive the options are to changes in the underlying assumptions that have been made. It involves varying the important and uncertain variable in the appraisals of benefits and costs to see what effect this has on the conclusions. If the conclusions are not markedly affected, then this contributes to the robustness of the case. The technique is not difficult, especially if the calculations are automated using simple spreadsheet models.

TESTING BENEFIT CRITERIA

2.54.1 A weighted scoring system for assessing benefit criteria is described in Step 4 of the business case process. If only ranking of options has taken place, then a sensitivity analysis of benefits will not be possible.

2.54.2 In sensitivity analysis, both the scores (ratings) and weightings are varied to examine how the ranking of options responds to changes in these variables. The numbers should be altered not by a fixed amount or percentage, but by an amount which reflects the uncertainty. This uncertainty may have been expressed by those who participated in the workshop to assign values. If, for example, there was considerable disagreement as to a particular weight that should be allocated to a criterion then a large alteration in the weight should be made when performing sensitivity analysis.

Testing Scores

2.55.1 To perform a sensitivity analysis of the scores given to the benefit criteria for an option, the following steps are taken:

1. Determine the agreed range of scores for each criterion.

2. Alter the score for the first criterion within its agreed range and note the result.

3. Repeat the analysis for the scores of each of the other criteria.

4. Note the total benefit weighted score when all scores for the option are at their maximum, and when they are at their minimum.

Table 9 gives an illustrative example of testing the sensitivity of benefit scores.

Testing Weights

2.56.1 Performing a sensitivity analysis of the weights allocated to each criterion is more complicated because when the weighting of one criterion is changed, it affects the weighting of the rest:

1. Determine the agreed range of weights for each criterion.

2. For the first criterion allocate the change in weight across the other weights.

3. Adjust the weights arising from the change in weight of the first criterion, and note the result.

4. Repeat the analysis for the weights of each of the other criteria.

Table 10 gives an illustrative example of testing the sensitivity of benefit weights.

2.56.2 Clearly a large number of sensitivity analyses on weighted benefit scores can be carried out, by varying different combinations of weights and scores. However, a limit should be applied, reflecting the size of the appraisal and the perceived levels of risk. Because weighting and scoring systems invariably rely on subjective judgments, sensitivity testing is important to highlight the effect of any bias.

TESTING COSTS

2.57.1 Testing the sensitivity of options to variations in cost involves recalculating the capital and revenue cost calculations with various cost items set at different ranges of values. The discounted cash flow calculations are then repeated to calculate the net present costs that arise from alteration.

2.57.2 It is insufficient to test the sensitivity of the investment options simply by adjusting all costs, or broad categories of cost, by, say, plus or minus 10%. Rather, testing should examine a wide range of possible uncertainties and ask What if? questions about all the assumptions that are made; for instance, about:

- Costs and prices of the main revenue costs: what if they rise or fall annually in real terms, or with a compounding effect (e.g., labour costs rising by a real 1% per annum, or building maintenance costs changing as property ages)?
- Cost expenditures and savings: what if these occur later or sooner than envisaged (e.g., because of delays in realising the benefits of a project)?
- Improvements in efficiency or effectiveness: what if these are not achieved at the rate expected (e.g., because staff re-organisation following implementation is more difficult than envisaged)?
- The phasing of the project: what if it changes (and the timing of payments is altered, or transitional costs are incurred for longer periods)?
- Demand for services: what will the impact be if demand differs from that expected (e.g., if workload, populations, cross-boundary flows are greater or smaller)?
- Receipts of cash: what if these are not achieved when expected (e.g., if market conditions mean that land sales do not occur when planned)?

2.57.3 This list is purely illustrative, and planners are expected to critically review the specific assumptions underpinning each option in an appraisal. The probable extent of variation is not likely to be the same in every option, nor to rise or fall by the same amount in optimistic and pessimistic cases. It should be noted too that some parameters will be interdependent, and a change in one assumption may imply a change to another assumption. For example, a rise in labour rates may imply a rise in the cost of another labour-intensive input to the option, such as that for contract services or professional fees in the capital costs.

TABLE 9 TESTING SENSITIVITY OF BENEFIT CRITERIA SCORES

Example

Attribute	Benefit criteria weights	Score	Weight x score
Quality of clinical care	30	10	300
Accessibility (travel times)	15	10	150
Flexibility of accommodation	20	9	180
Quality of the physical environment	20	3	60
Acceptability to staff	15	7	105
	100		795

Variation in scores:
Scores for Quality of clinical care and accessibility reduced to 8

Attribute	Benefit criteria weights	Score	Weight x score
Quality of clinical care	30	8	240
Accessibility (travel times)	15	8	120
Flexibility of accommodation	20	9	180
Quality of the physical environment	20	3	60
Acceptability to staff	15	7	105
	100		705

Result: Weighted score is reduced to 705 from 795

SWITCHING VALUES

2.58.1 One particularly effective way of presenting the results of sensitivity testing is to calculate the *switching value or crossover point* of crucial factors. The switching value is the amount by which the variable would have to change in order to affect the ranking of options. The calculation of switching values can be especially helpful where there is uncertainty about the amount by which project parameters are likely to vary. It can show how much the value would have to fall (if it is a benefit) or rise (if it is a cost) to make it not worth undertaking the option, and a view can often be relatively easily taken about the likelihood of the factor turning out worse than the switching value.

SCENARIO PLANNING

2.59.1 Scenario planning looks at the effect on the success or otherwise of an option of combining different assumptions about the future. A small number of scenarios (normally optimistic, pessimistic and neutral) is chosen and the expected net present cost of each investment option is calculated for each of the chosen scenarios. Each

scenario can itself be tested for sensitivity to changes in the key variables. For investment appraisal the key questions to explore under different scenarios are:

- Does the ranking of options change under optimistic and pessimistic scenarios from the central case?
- How likely are the best and worse cases to arise?
- What would be the effect on affordability and Trust prices of each scenario?

2.59.2 Scenarios can be constructed from data about the project cost and the strategic context within which it is being proposed. For example, a pessimistic scenario might be that capital costs turn out at the top of the possible range, project completion is delayed so that revenue reductions are later or lower than envisaged, and demand for services is not as high in the medium to long term as projected.

ROBUSTNESS OF OPTIONS

2.60.1 Sensitivity testing and scenario planning will highlight the assumptions to which the result of the appraisal of investment options is most sensitive. If the conclusions do not differ when different assumptions are made (that is, a different ranking of options does not result), then the conclusions are likely to be robust. If, under a changed assumption, the results of the benefit or cost assessments do alter, then the likelihood that the change in the assumption will arise must be assessed. If this is not very likely, then the choice of the preferred option may remain robust; otherwise the choice is unduly risky.

Identifying Risk

2.61.1 Sensitivity testing makes managers aware of the nature of the risks associated with the most likely options. For example, large information systems projects are prone to risk by virtue of their complexity. This is particularly true for solutions which require some degree of integration, either within the organisation or externally. For the leading options, appraisals should:

- identify the factors that are most certain and those that are least certain;
- identify where uncertainty might be of the most importance, and the implications of key uncertainties for benefits and costs;
- make at least broad quantitative judgments about probabilities and ranges of potential variation of the important factors determining the outcome;
- highlight cases where the probabilities of under- and over-estimation do not balance out, and assess whether there is optimistic bias (and if there is adjust figures accordingly); and
- consider whether risks and uncertainties justify more flexible designs.

2.61.2 The aim should be to develop options that minimise the major risks. For instance, flexible designs that can accommodate changes in demand or the ways in which health service are delivered, smaller developments that reduce the time and cost overruns associated with large projects, or phased options which provide scope for alteration if circumstances change.

2.61.3 At this point in the Business Case process, many of the most significant risks to the leading options will have been identified. It is worthwhile to begin thinking about the formulation of a risk management strategy in outline, covering:

- the key risks identified to the investment;
- the early-warning indicators that will show that problems are arising;
- the means by which early-warning indicators will be spotted; and
- the action that will be taken to minimise the impact of changes to assumptions.

Assumption of Risk

2.62.1 The question of with whom the primary risks lie should also be addressed. This is of primary importance when considering the use of

TABLE 10 TESTING SENSITIVITY OF BENEFIT CRITERIA WEIGHTS

Example

Attribute	Benefit criteria weights	Score	Weight x score
Quality of clinical care	30	10	300
Accessibility (travel times)	15	10	150
Flexibility of accommodation	20	9	180
Quality of the physical environment	20	3	60
Acceptability to staff	15	7	105
	100		795

Variation in weights:
Weight for quality of clinical care is increased by 10 to 40:

Weight to be subtracted from:

Accessibility = 10 x 15/70 = 2
Flexibility = 10 x 20/70 = 3
Quality of environment = 10 x 20/70 = 3
Acceptability to staff = 10 x 15/70 = 2

Attribute	Benefit criteria weights	Score	Weight x score
Quality of clinical care	40	10	400
Accessibility (travel times)	13	10	130
Flexibility of accommodation	17	9	153
Quality of the physical environment	17	3	51
Acceptability to staff	13	7	91
	100		825

Result: Weighted score is increased to 825 from 795

private finance. The list below indicates the key questions that would need to be answered in a business case.

Who bears the consequences:

- if the requirement is less/greater than forecast?
- if the benefits are less/greater than forecast?
- if the costs are less/greater than forecast?

What are the obligations on each party?

- is the NHS contribution clear?
- what risks have been transferred to the private sector?
- what rights and flexibilities does the NHS retain?

What would happen if standards were not met?

What would happen if the contractor became insolvent?

Outputs Produced from Step 6

1. Sensitivity analyses on benefits.
2. Sensitivity analyses on costs.
3. Risk scenarios.
4. Report on the sensitivity analyses and option risks.
5. Outline risk management strategy.

Checklist: Assessing Sensitivities to Risks

1. Conduct sensitivity tests on the weighted scores for the benefit criteria for each option.
2. Conduct sensitivity analyses on the costs of each option.
3. Ensure that the factors that are tested for the effect of variation realistically reflect all the likely risks.
4. Examine best (optimistic), worst (pessimistic) and neutral case scenarios.
5. Identify the critical factors which affect the ranking of options.
6. Assess the likelihood of variations in the critical factors occurring.
7. Assess whether the options are robust, or are subject to undue risk.
8. Develop less risky options if none of the feasible options are robust.
9. Produce a report on the sensitivity analysis and option risks.

Step 7 Identify the Preferred Option

2.63.1 This is a short step in the investment appraisal process. It consists of analysing the information that has been generated in Steps 3 to 6 on each short-listed option about their benefits, costs and level of risk. The final choice of a preferred option rests with Trust senior managers, or a range of options may need to be put to purchasers so that they can express their preference. The business case team should aim to present the information succinctly to help managers reach a decision.

Selection of the Preferred Option

2.64.1 The steps involved in making a choice are to rank the options in order of benefits (Step 4), and then to set the net present costs of each option (from Step 5) alongside the benefits. It may be possible immediately to identify an option which is clearly the best solution (maximum benefits at lowest cost with an acceptable degree of risk), or to rule out options which are clearly inferior (fewer benefits at higher costs).

2.64.2 However, a clearly superior choice may not be immediately evident; often the choice will be between an option offering lower costs but fewer benefits and one at higher cost but with better benefits. Determining the preferred option will be a matter of judging the value of the additional benefits of an option against the additional costs that would be incurred if the option were selected. The preferred option will be the one that affords the greatest ratio of benefits to costs. In these situations, a fine assessment of the risks and uncertainties (Step 6) and an appreciation of purchasers' views can help with decision-making.

AFFORDABILITY

2.65.1 The ability of the Trust to afford each separate option will have been reviewed as part of Step 5 (Identifying and quantifying the costs). The affordability of the preferred option should now be re-examined. Initially the focus of the question 'Is this investment option affordable?' may be on the capital funds required. However, it is the revenue consequences of investments which the Trust, and its customers, will have to afford every year.

2.65.2 It is necessary therefore to assess the impact of implementation of the option on the contract prices an NHS Trust will have to charge for its health care services. Costs will have to be covered by income year by year, and Trusts must be confident that existing purchasers will continue to contract for health care services, or that new purchasers will secure additional contracts.

The Implication of Capital Charges

2.66.1 In assessing the impact on prices, capital charges must be considered. Capital charges are significant when considering the affordability of the planned development and they must be included in year-by-year financial projections, together with external financing limit (EFL) allocations, running costs, and contract income from purchasers.

The Impact on Competitiveness

2.67.1 The benefits that the preferred option will deliver – health and quality gains, for example, and the prices that the Trust will charge as a result, will have an impact on competitiveness. Trusts therefore also need to compare the prices and quality levels of comparable services offered by competing local providers.

Outputs Produced from Step 7

- The output from this step is the selection of the preferred option. The reasons for the recommendation should be recorded to show that it has been reached on the basis of proper assessments of:

  - the relative costs and benefits of short-listed options;
  - risks and uncertainties;
  - affordability; and
  - purchaser support.

- If the preferred option is an IM&T-based solution the Procurement Plan (Step 4 of POISE) should be produced and approved internally.

Step 8 Present the Outline Business Case

2.68.1 The objective of presenting the Outline Business Case is to demonstrate project viability and obtain funding, subject to the preparation and approval of the Full Business Case. The Outline Business Case must be presented in a way that provides the NHS Executive Regional Office with the best possible information upon which to make a decision.

Presentation of Results

2.69.1 The Outline Business Case must be set out in a written report. The purpose of doing this is to summarise the results of the Strategic Review (Step 1) and the Investment Appraisal (Steps 2 to 7) and present information concisely to enable decision makers to reach an informed judgment.

LEVEL OF DETAIL

2.70.1 The level of detail entered into with regard to costs and benefits assessments of the options considered will have to be tailored to meet the requirements of the approving body, in order that they can make an informed decision. This should have been discussed between the proposers and the approving body following the completion of Phase I, the Strategic Context.

CONTENT AND STRUCTURE

2.71.1 The results of a capital investment appraisal should be set out in a report covering:

- the strategic context;
- the options considered, including:
  (a) 'do nothing' or 'do minimum'
  (b) realistic alternatives
  (c) the preferred option;
- a comparison of the preferred option with the alternatives; and
- its implications and effects.

2.71.2 Table 11 indicates the main points that should be addressed by the Outline Business Case report. The major features of the appraisal must be set out clearly and in a logical order (i.e., step-by-step, as in the process set out in this guide), together with all relevant assumptions. It must show that:

TABLE 11 THE OUTLINE BUSINESS CASE REPORT

Executive summary
Summary of options.

Benefits of the preferred option for patients (e.g., health gain, quality gain, improved access, price reductions) and for the estate (rationalisation or reduction in backlog maintenance).

Statement of purchaser support.

Strategic context
Past and future trends, performance indicators.

The current health care facilities and benefits provided for patients.

Future demand for health care services.

Competitive position of the NHS Trust.

Capital assets required to meet future demand.

SWOT analysis.

The case for change, based on the gap between existing assets and future needs.

Options
Capital investment objectives and criteria for selection.

Long list of options, preliminary sift, description of the short list of options examined, reasons for exclusion/inclusion, flexibility of options.

Tabulated appraisal of benefits (quantified as far as possible).

Tabulated appraisal of costs: capital costs (land/buildings/hardware/on-cost/equipment), annual running costs (main cost components if available, including capital charges).

Tabulated discounted capital and running cost cash flows (net present costs or equivalent annual costs).

Assessment of risks and uncertainties with tabulated sensitivity analyses of benefits and costs and sensitivity to changes in demand and performance.

Tabulated summary of the appraisals of investment options.

The preferred option
Statement of best option: why it is superior/others are inferior.

Key factors responsible for superiority.

Precise nature of any benefits obtained at higher cost than other options.

Sensitivity of costs to variations in assumptions, with key risks identified.

If the preferred option is IM&T-based, the Detailed Statement of Need (POISE Step 6) for that option should be included.

Indication of purchaser support.

Financial implications
Impact on costs, including capital charges, and net effect on prices.

Year-on-year cash flow.

Impact on NHS Trust balance sheet and income and expenditure account.

Sales of assets.

Financing arrangements: eg, private finance, Higher Education funding.

- the recommended option is strategically viable, with evidence of support from purchasers;
- a credible short list of options has been examined to arrive at the preferred option, and that best use is planned to be made of existing resources;
- benefits and the outline capital and revenue costs of options have been assessed using sound quantitative techniques;
- risks and uncertainties have been appraised, and sensitivity analyses conducted to test for robustness; and
- a broad understanding of the likely impact on unit prices and competitiveness has been developed.

Consultation and Approval

2.72.1 It is unlikely that an Outline Business Case will be successful unless consultation has been held along the way between NHS Trusts, Regional Offices, purchasers and, where appropriate, universities. The aim should be to reach consensus throughout the process, although the approval will not be formally given until the Outline Business case has been presented and reviewed.

2.72.2 This step completes Phase II of the business case process. Forms OB1 and OB2 (on the following pages) should be completed and included in the Outline Business Case submission. These forms relate specifically to construction schemes.

2.72.3 Assuming that the Outline Business Case is approved, the production of a Full Business Case can proceed. Before embarking on Phase III, however, Trusts are recommended to discuss the scope of the Full Business Case with the outpost. A review of the work that has been performed to present the outline case should be conducted to identify what has to be done to produce a Full Business Case.

OUTLINE BUSINESS CASE FOR PREFERRED OPTION

Cost Form OB1

TRUST/PROVIDER UNIT* .....

SCHEME: .....

PHASE: .....

CAPITAL COSTS SUMMARY

		Cost Exc.VAT £	VAT £	Cost Incl.VAT £
1.	Departmental Costs (from Form OB2)			
2.	On-Costs (a) (% of Departmental Cost)			
3.	Works Cost Total (1+2) at.....FP/VOP* MIPS (Tender Price index level 1975 = 100 base)			
4.	Provisional location adjustment (if applicable) (% of £) (b)			
5.	Sub Total (3+4):			
6.	Fees (c) (% of sub-total 5)		(d) XXXXXXXXXX	
7.	Non-Works Costs (e)			
8.	Equipment Cost (from Form OB2) (% of Departmental Cost)			
9.	Planning contingency			
10.	TOTAL (for approval purposes) (5+6+7+8+9)			
11.	Inflation Adjustments (f)			
12.	FORECAST OUTTURN BUSINESS CASE TOTAL (10+11)			

Proposed start on-site (M/Y)(g)
Proposed completion date (M/Y)(g)

Cash Flow:-		SOURCE		£
Year	EFL	OTHER GOVERNMENT	PRIVATE Total Cost (as 10 above)	

This form completed by: .....

Telephone No: .....

Date: .....

Notes:

*Delete as appropriate

(a) On-costs should be supported by a breakdown of the percentage or a brief description of their scope (form FB3 may be used if appropriate).

(b) Adjustment of national average D.C.A. price levels and on-costs for local market conditions.

(c) Fees include all resource costs associated with the scheme e.g. project sponsorship, clerk of works etc.

(d) Not applicable to professional fees – VAT reclaimable EL(90) P64 refers.

(e) Non-works costs should be supported by a breakdown and include such items as contributions to statutory and local authorities; building regulations and planning fees; land costs and associated legal fees.

(f) Estimate of tender price inflation up to proposed tender date (plus construction cost for VOP contracts only).

(g) Overall timescale including any preliminary works.

OUTLINE BUSINESS CASE FOR PREFERRED OPTION

Cost Form OB2

TRUST/PROVIDER UNIT* .....

SCHEME: .....

PHASE: .....

CAPITAL COSTS: DEPARTMENTAL COSTS AND EQUIPMENT COSTS

Functional Content	Function Units/Space Requirements (1)	N/A/C (2)	Cost Allowance Version (3)	Equipment Cost Version (3) .....
			£	£
				£
Less abatement for transferred equipment if applicable (.....%) (4)				
Departmental Costs and Equipment Costs to Summary (Form OB1)			£	£

Notes:
Cost allowances should be based on Departmental Cost Allowances where appropriate and include allowances for essential complimentary accommodation and optional accommodation and services where details not available.
Identify separately any proposed adjustment (over or under cost allowances) justifiable in value for money terms (details to be provided)

* Delete as appropriate
1. State area and rate if departmental cost allowance not available
2. Insert:
   N for new build,
   A for adaptations for alternative use or
   C for upgrading existing building retaining current use
3. Insert relevant version number of CONCISE 4 database listing of Departmental Cost Allowances and Equipment Cost Allowances
4. Provide details where available

Phase III: Full Business Case

Step 9 Produce the Full Business Case

3.1.1 Work should not start on the Full Business Case until the Outline Business Case has been approved. Trusts are recommended to consult with the NHS Executive Regional Office on the scope of work required to produce a Full Business Case. This should be based on an assessment of the content of the Outline Business Case, aimed at identifying the nature and extent of the information, and level of detail, needed to present a Full Business Case.

3.1.2 The general principles governing the production of a Full Business Case are outlined in this chapter. More detailed, asset-specific guidance is given in *Management of Construction Projects* and the *IM&T Guide*, for construction and IM&T schemes respectively.

3.1.3 Phase III of the business case process therefore entails reviewing and refining the work done for the outline case, and developing and presenting plans for managing the project. The result of this stage will be a detailed business case. Among the mandatory outputs of this stage are plans for project management, monitoring, post-project evaluation and risk management. For construction schemes, a Development Control Plan will also be required.

Refining the Business Case

3.2.1 The business case must at this stage be reviewed to update the information provided in the Outline Business Case and to refine the details of the investment appraisal leading to the selection of the preferred option. This involves reviewing Steps 1 to 7 set out in this guide.

STRATEGIC CONCEPT (STEP 1)

3.3.1 The strategic context of the proposal must be reviewed to ensure that it remains up-to-date and that sufficient detail is provided to support the assessment that there is a case for change. In particular, it will be important to re-examine the following:

- Need: have there been any changes to the Trust's market position, Strategic Direction or supporting business strategies (service, estate, financial, human resource or information strategies) that affect the need for, or content of, the scheme?
- Options: have there been any changes in available options and/or are there additional options that should now be considered?
- Functional content: have there been any changes to the functional content that would affect the capital or running costs of the scheme or the ranking of options?
- Costs: have there been any changes to costs that:

  i. affect the ranking of options;

  ii. are greater (or less) than those examined in the risk and uncertainty analysis; and/or

  iii. are in excess of the sums available for the scheme?
- Benefits: have there been any changes to the assessed benefits of the scheme that might affect the ranking of options?
- Uncertainty/risk: are there any changes to the level of uncertainty surrounding the scheme's appraisal, or have any significant new risks been identified that might affect the decision to proceed or the ranking of options?
- Affordability: have there been any changes to the Trust's financial position that are significant enough to question the scheme's affordability?
- Commitment of purchasers: have there been any changes to the commitment of purchasers (including those resulting from organisational change) that might affect the viability or affordability of the scheme?
- Competition: have there been, or are there likely to be, any changes in other providers' services which might affect the viability of the scheme?
- Timetable: have there been any changes to the planned start and completion date that might affect the ranking of options or the timetable for funding?

3.3.2 Quantified workings will be required in the Full Business Case to show how the services to be provided are derived from projections of demand and the characteristics of the population to be served. The aim is to show broadly that the direction of change is right. Trusts must show that they have analysed how sensitive their conclusions are to changes in demand and purchasers' requirements in the medium-to-long term.

OBJECTIVES AND BENEFIT CRITERIA (STEP 2)

3.4.1 For the Outline Business Case, this step will have produced a statement of objectives for the investment, a list of benefits that it would seek to obtain and the benefit criteria for the selection and evaluation of options. The review should:

- confirm that the investment objectives remain current;
- prune out any benefit criteria that experience showed were weakly linked to the objectives; and
- identify any important benefit criteria that were omitted from the original assessment of benefits.

Benefits Realisation Plan

3.5.1 For the preferred option, a *Benefits Realisation Plan* should be developed. This will be required to develop the post-project evaluation plan described below. This is of particular importance with regard to IM&T-based solutions. Detailed guidance on developing a Benefits Realisation Plan for IM&T investments is given in the *IM&T Guide.*

3.5.2 For each benefit attributed to the benefit criteria, this requires the following questions to be answered:

- What is the benefit and when will it be achieved?
- Are there any disbenefits?
- What actions need to be taken to achieve the benefit?
- Who is responsible for ensuring that the benefit will be achieved?
- How will achievement of the benefit be measured?
- Who will monitor how well the benefit is being achieved?
- What other conditions need to be satisfied to achieve the benefit?

3.5.3 By this stage it is important to have developed a Trust-wide understanding and commitment to the realisation of benefits from the capital investment. This means that not only are individuals identified with responsibility for realising each benefit, but that there is widespread ownership and identification with the project. This will generally be achieved through the participation of people in the business case process through involvement in decision-making and consultation on the most important aspects, followed by continued involvement through the project implementation stages.

3.5.4 For example, benefits arising from, say, the provision of new laboratories, are most likely to be obtained if the managers and staff who use the facilities are involved in these aspects of appraising the options and developing the business case. Acceptance of change may be vital if benefits are to be realised with the greatest effect. For instance, the provision of new day-surgery facilities may require alterations to staffing arrangements or the closure of existing facilities to maximise benefits or cost savings. Frequently change is more readily accepted when the people affected are given the opportunity actively to participate in the process. Consequently, Benefit Realisation Plans must address the important issues of organisational development and management of change.

OPTION SHORT LIST (STEP 3)

3.6.1 The content of the option long list should be reviewed, and the short list should be re-examined to ensure that it is robust. Full Business Cases should state clearly the reasons for the selection of options that were short-listed.

BENEFITS ASSESSMENT (STEP 5)

3.7.1 Depending on the size and complexity of the investment proposal, it may only be during the Full Business Case phase that a full benefit scoring and weighting exercise involving an expert team is conducted. If a scoring and weighting exercise was performed earlier, revision of the benefit measurements may be necessary at this stage in order to:

- take out the effect of any benefit attributes which are now assessed to be weakly linked to the investment objectives; and
- incorporate any benefit criteria which have subsequently arisen into the assessment.

3.7.2 The overall aim is to ensure that in the final result subjective judgements, influenced by minor objectives or attributes of the options, have not unduly affected the outcome.

COST ASSESSMENT (STEP 5)

3.8.1 A more detailed assessment of the costs of the options, and particularly the preferred option, must be undertaken for the Full Business Case. The cost of the scheme assessed at Full Business Case will be the cost on which annual EFLs are established. Trusts will need to ensure that the risk and uncertainty analysis undertaken as part of the business case is used to estimate the level of contingency required. They must also identify the capital and running cost variations that would lead them to undertake an internal review of the business case. Variations in scheme content that result in an increase in cost of 5% or more will result in automatic lapse of approval. Variations in capital cost of more than 10% will similarly lead to lapse of approval. In such circumstances, Trusts should consult the NHS Executive Regional Office.

3.8.2 However, the level of detail and accuracy must reflect the importance of the cost item to the overall cost of the option. Generally:

- Sound estimates for annual running costs are more important than an accurate capital costing, since they:

(a) are committed costs for the future and affect prices that purchasers will have to pay;

(b) usually have a greater effect upon any comparison of net present costs than capital costs (for example, at a discount rate of 6% over 20 years, annual running costs of £10 million have a net present cost of some £115 million).

- Costs incurred in the earlier years of a project's life need to be more accurate since they have more significance in a comparison of net present costs (for example, at a discount rate of 6%, the net present cost of amounts incurred in 10 years' time are discounted by around 50%, and in 20 years' time by 70%).

3.8.3 Consequently, the implications are that the Full Business Case review of the costing should fully consider the running costs for all options. The capital costs of the preferred option will need updating and refining. This is likely to entail:

- further detailed work on developing running cost estimates; if costs have not previously been modelled, this may involve the development of a cost model on computer;
- corroboration of running cost estimates, by estimating costs using several methods and by wide consultation; and
- commissioning the preparation and costing of detailed designs for the preferred option.

Private Finance

3.9.1 The costs and benefits of any option which uses private financing in any form should, where possible, be compared with an equivalent option financed conventionally to demonstrate how best value for money is being achieved. (This must be done for all schemes involving leasing.)

RISK ASSESSMENT (STEP 6)

3.10.1 If the investment is large or complex, a more rigorous assessment of risks will be required. There are essentially two separate but related steps to be carried out. The first involves validation of the analysis undertaken in the Outline Business Case; this may, for instance, entail further sensitivity analyses on combinations of running cost changes or benefit weights and scores or both. The second step involved will need to focus specifically on the preferred option and in particular on the factors that might affect the capital costs.

THE PREFERRED OPTION (STEP 7)

3.11.1 Simple statements that investment schemes are affordable and feasible are not sufficient in a Full Business Case. The case must demonstrate, on current resource and market assumptions, that the recommended option can be afforded and how the costs would be met. This should cover both capital and revenue cash flows with at least five-year projections of NHS Trust balance sheets, showing the impact of new assets, and income and expenditure statements, incorporating capital charges. The sources and yearly incidence of cash should be identified, including that from land sales or private financing.

3.11.2 Options which make use of the existing capital resources through refurbishment, adaptation or rationalisations should be fully explored. For major investments, alternatives under each of these headings must also be considered: for instance:

- In what ways could the option be postponed, accelerated or phased differently?
- Can options be broken down into a number of components each of which is itself an option?
- If options can be broken down into smaller, phased schemes, is each component cost-effective on its own?

3.11.3 Full assessment of feasibility will include consideration of the practical aspects of any substantial service change (such as a change of use or an associated hospital closure). All cases with substantial manpower implications will need to address issues of recruitment, professional training, accommodation, redeployment or redundancy.

Presentation of the Full Business Case

3.12.1 The Full Business Case should be presented in the general form outlined in Appendix 5, adapted as necessary to reflect the various factors which determine the choice of option. The purpose of the Full Business Case document is to show that the recommended investment:

- accords with strategic goals and objectives to meet customers' requirements, and recognises the Trust's competitive position;
- offers best value for money;
- is affordable and feasible; and
- will be properly managed, executed and evaluated.

3.12.2 To demonstrate the last of these points, the Full Business Case must include:

- details of the project organisation arrangements for the implementation of the investment;
- a risk management strategy; and
- a post-project evaluation plan.

PROJECT CONTROL AND MANAGEMENT

3.13.1 It is important that the Full Business Case explains the project management arrangements that show how Trust management has effective control over each project in its capital programme. The Full Business Case must explain the proposed management control arrangements. The reporting arrangements that will be put in place for the project should also be included; for example, how and when the project manager reports to the project director and what the arrangements are for the IDM to have oversight of the project. Fuller details are contained in the *Project Organisation* booklet.

CONTRACTING STRATEGY

3.14.1 The Full Business Case should consider the contracting strategy in some detail to develop a framework for procurement and explain the following main factors:

- the availability of in-house resources;
- project size and complexity;
- the importance of timescale and the possibility of requiring phased completion;
- importance and availability of information about the requirements of the scheme and its quality; and
- availability of funding.

3.14.2 Reference must be made to the constraints, requirements and objectives of a scheme, so that the optimum contract strategy can be adopted.

Post-project Evaluation

3.15.1 The purpose of post-project evaluation (PPE) is to improve project appraisal at all stages of a project from the business case through design, management and implementation. It is a process which aims to assist with decision-making and project management, and improve the way in which service requirements are met through the capital building programme. It is a learning process and should not be seen as a means of apportioning blame.

3.15.2 PPE must be conducted as a matter of course for all projects with a works cost in excess of £1 million. Within the process of producing a Full Business Case, plans must be made for monitoring the progress and completion of projects, and for evaluating the outcome following implementation. The PPE plan should be appended to the Full Business Case document. Guidance on preparing a PPE plan is given in the *Post-project Evaluation* booklet.

RISK MANAGEMENT STRATEGY

3.16.1 Risk and uncertainty will exist for any proposed capital investment. The Full Business Case document must include a risk management strategy. This shows how Trusts plan to minimise risk and what action will be taken if problems do occur. The sensitivity analyses conducted for the Outline Business Case, and developed in more detail for the full case, will make managers aware of the risks associated with the assumptions underlying the recommended option.

3.16.2 The sensitivity testing conducted for the Outline Business Case (Step 6) and amplified for the Full Business Case should alert managers to the risks associated with the preferred option. It will have highlighted the assumptions to which the robustness of the proposal is most sensitive. There will be risks to the implementation of the project itself (e.g., cost overruns, delays), and to the realisation of benefits once the project is completed (e.g., such as changes in purchaser strategies or clinical requirements). Plans for a risk management strategy will need to be developed and presented as part of the Full Business Case. This will require risks and countermeasures to be noted at this stage, so that pre- and post-implementation monitoring can be planned for. The kind of questions which should be addressed are:

- What could go wrong?
- How could we stop it happening?
- If something was going wrong, how would we know?
- What would we do about it?

Managing Project Risk

3.17.1 Plans to minimise project risks might, for instance, consider the scope for better contractual arrangements, or delaying the project if this reduces important risks, or phasing it in some way. During project planning and implementation, one simple method of containing risks is to keep a risk register. This is a list of all the potential risks to the project that have been identified. It can be started during the business case process, and items can be added to it at any time. Risks can then be regularly and systematically reviewed at project management meetings. Procedures to contain the risks that have been identified can be put in place, and items deleted from the register if the risk has passed.

3.17.2 Having developed an understanding of the risks associated with the proposed option, managers will be in a better position to act swiftly if changes to factors affecting key assumptions occur. Risk management strategies need to be presented which address the key risks that have been identified to the realisation of benefits from the proposed investment, and show:

- an understanding of the consequences, if key assumptions about factors such as service demand, performance, cost savings, turn out differently;
- how changes in key factors will be monitored so that changes to assumptions can be spotted before having an impact;
- the actions that can be taken to minimise the impact of changes to assumptions; and
- the allocation of responsibility for monitoring risk, for initiating preventive action and for ensuring each identified benefit is realised.

3.17.3 Finally, the most robust proposals will be those which are by nature inherently low risk. These will generally have built-in flexibility; among their features will be:

- phasing of implementation so that there are break points to review external developments before proceeding with the next stage; and
- adaptability, so that even if service requirements and the strategic context change substantially the investment continues to deliver a range of benefits.

Outputs Produced from Step 9

1. Revised, good-quality investment appraisal.
2. Detailed proposals with costings.
3. For construction schemes, a Development Control Plan.
4. Statement of how the project is to be controlled and managed.
5. A contracting strategy.
6. A post-project evaluation plan.
7. A benefits realisation plan.
8. A risk management strategy.

Appendices

Appendix 1: Strategic Analysis Techniques

A number of well established techniques are used by business strategy and business planning practitioners. This appendix contains two of the most frequently used.

Porter's Five Forces Model

Michael Porter's model provides a useful framework in which to assess the intensity of competition in an industry. This technique is used widely in the private sector and with modification can also be applied to a health care market context. Five basic competitive forces are identified: the interaction of these forces determines the state of provider competition and its underlying purchaser environment.

The Five Forces

The key influences to consider in assessing competition are:

The threat of new entrants
This is a function of the barriers that exist to impede new entry into an industry. Such barriers can arise from the following main sources:

(a) economies of scale;
(b) capital requirements;
(c) government policy;
(d) cost advantages independent of scale (proprietary technology, favourable locations, etc).

In addition to the above, the threat of entry is also influenced by the potential entrant's expectations with regard to the reaction of existing providers.

Rivalry among providers
The degree of rivalry among providers is a function of a number of interacting structural features. Numerous or equally balanced competitors, slow growth, high fixed costs and lack of switching costs and high exit barriers can all serve to increase the intensity of rivalry. Rivalry can manifest itself in a number of forms – price competition, a high rate of service innovation: and increased levels of customer service. Trusts need to understand the implications of developments taking place in other providers.

Alternative patterns of health care provision
The presence of effective substitutes to a product or service will influence the provider environment; for example, the increased use of day surgery and the policies towards increased care in the community.

The bargaining power of purchasers
Purchasers may be able to exert pressure by negotiating for improved services, better quality and lower prices. The power that purchasers hold is a function of a number of factors and is likely to be high when:

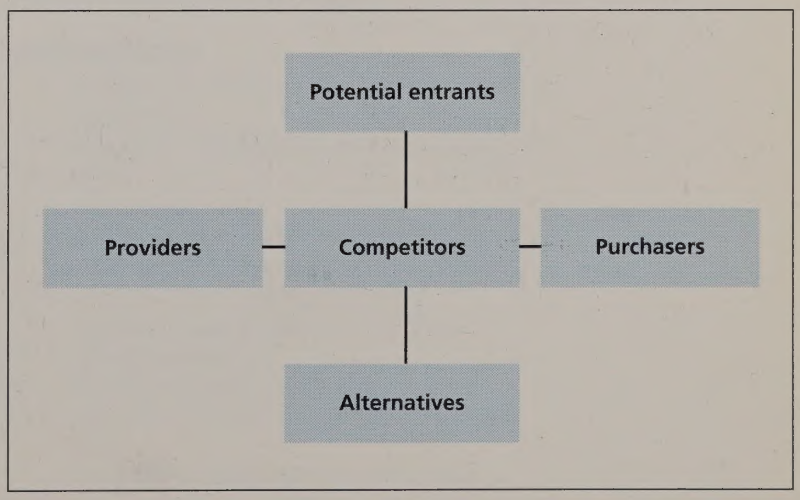
(a) one or two purchasers take up a large proportion of the services provided (power in the market);
(b) the Trust provides a significant proportion of the purchaser's requirements (power over individual providers);
(c) the costs of switching to other providers are low.

The bargaining power of providers
Providers can equally exert power over purchasers in an industry by raising prices when they are monopoly providers or providing 'exclusive' services. The conditions which tend to make providers powerful are the mirror-image of those making purchasers powerful:

(a) a single provider supplies most of the purchaser's needs (can command price);
(b) the purchaser buys on a very small scale from the provider and so is price-insensitive;
(c) switching costs are high.

The five forces discussed above are summarised in Figure 8.

FIGURE 8 FORCES DRIVING COMPETITION



SWOT Analysis

A second technique is widely used already in the NHS. A SWOT analysis (strengths, weaknesses, opportunities, threats) is a technique which may be applied to a business, to assess its market position vis-à-vis its environment. It also facilitates assessment of a company's strategic options, and of the key decisions to be made to secure future growth or assessments of any other area of interest.

SWOT analysis is a quick and easy-to-use method of identifying the major options and strategic decisions affecting the future of a company. When used properly it can assist the decision-maker in thinking critically about the business, highlighting areas of immediate concern which should be researched in more depth.

SWOT analysis helps find the best match between external or other trends (opportunities and threats) and internal capabilities (strengths and weaknesses). The method is based on the completion of a simple matrix as follows:

Strengths	Weaknesses	INTERNAL
1 2 3 4 etc	1 2 3 4 etc	
Opportunities	**Threats**	EXTERNAL
1 2 3 4 etc	1 2 3 4 etc	

How to use it

Taking each section in turn, the approach should be to list out the features of the provider which fall under each category. These features will generally be at the strategic level (i.e. market share, growth, competitor profiles, etc). A sample SWOT matrix might therefore look as follows:

S	W
– two local purchasers provide 85% of contract income – high quality staff	– high level of staff turnover (20%) – administration overheads high (12%)
O	**T**
– expand service base – increase specialist international private patients to generate income	– possible referral by GP Fundholders to neighbouring NHS Trust

Appendix 2: Examples of IM&T Benefits

Introduction

This Appendix describes a number of classification systems for benefits, and also lists a number of readily identifiable benefits that may accrue to an organisation from an IM&T investment. These benefits are categorised, for convenience, under general staff and organisation-wide benefits and then under each functional area of the organisation.

Classification of Benefits

Benefits available following the implementation of an IM&T investment have been classified in a number of different ways. Each one reflects a particular perspective, and may promote though on particular benefit areas to be addressed.

Most classifications are based on a traditional approach where automation/IT investment takes place in a labour-intensive industry to reduce staffing costs. This is less relevant to a health care organisation than to, say, a production line, since, for example, in a hospital the vast majority of staff are professionals and in most areas of expertise a small number are required to maintain its activity.

Examples of classifications in use are as follows:

QUANTIFIABLE AND UNQUANTIFIABLE BENEFITS
Tangible benefits include all those that can be measured in monetary terms, or by some physical measure such as length of stay (LOS), staff turnover, reduction in number of lost test requests.

Intangible benefits are those which it is difficult to measure; these relate to staff and patient satisfaction, enhanced service, etc. For many of these, it is possible to devise a parameter or valuation for comparison purposes; however, absolute measures or values would be difficult to assign.

STAFFING AND OTHER RESOURCE BENEFITS
Staffing benefits relate to time savings effected by the system; these may take the form of task elimination, reduction or transfer (change of skill mix).

Other resource benefits may include reduction in stock held, lost stock, wasted food orders, etc.

DIRECT AND DERIVED BENEFITS
Direct benefits are those stemming immediately from the investment, for example, elimination of duplication of data entry.

Derived benefits include costs savings to patients/ the community due to reduced LOS and reduced waiting time at outpatient clinics; improved working practices due to formalisation of procedures (which might have been done even without the introduction of the investment in IM&T).

Extended Concept of Benefit

The concept of benefits has been extended in this approach to include all outcomes of the investment. Thus, the traditional notion of benefit as reflected by monetary values is only one element of potential investment outcomes. There are potentially a number of other valuable outcomes to the investment.

The recommended approach is to conduct the full derivation of all types of outcomes, irrespective of the ability to measure their value in monetary terms or otherwise, by using the hierarchical process which generates the value-chain between each identified benefit and the objective(s) it supports. Thus the impact of each beenfit on the organisation's performance can be explicitly demonstrated. This approach supports the process of choosing between disparate alternative options such as ten new terminals or ten new staff.

Examples of Benefits of an IM&T Investment

The list should not be viewed as comprehensive, and some of the benefits can be realised in different ways. For example, time savings can be realised as cost savings, improved quality of care or increased time-off duty for staff.

STAFF-RELATED

- change in work content, organisation and conditions;
- reduction of monotonous and repetitive tasks;
- less routine work;
- greater range of information to the individual;
- extension of the operational environment;
- scope for more self-supervision;
- less stress at workplace;
- tidier environment;
- less fear of making mistakes;
- extension of work relations beyond local area;
- increased number of new workplaces;

- possibility of more flexibility in working hours and schedules;
- easier, more consistent training in work role;
- possibility of reduced work hours;
- revaluation of the workplace, improved status;
- more time for creative and specialised work;
- independence from clerical/secretarial/ medical, etc. staff.

ORGANISATIONAL

- better communications between work areas;
- interdisciplinary co-operation promoted;
- enhanced scope to identify inefficiencies;
- better planning and control of services;
- better forecasts;
- fewer peaks and troughs of demand/ provision of services;
- less stock losses;
- reduced consumables;
- less accommodation required for stock;
- better image;
- better quality output;
- competitive advantage;
- easier staff placement;
- lower staff turnover;
- greater organisational flexibility;
- faster reaction possibility;
- improved emergency assistance;
- information for medical audit;
- faster administrative procedures;
- audit trails of actions from system;
- more reliable information;
- more timely information;
- more work/greater range of work;
- improved throughout.

DISBENEFITS

- depersonalisation of work, less person-to-person contact;
- fear of consequences of rationalisation;
- loss of workplace security;
- new authority hierarchy based on information access;
- dependency on IT specialist, especially when things go wrong;
- formalisation of procedures with less incentive for variation;
- new individual roles and perceived competition;
- danger of use of information for power advantage;
- high consumables cost of technology;
- less flexibility due to formalisation;
- security lapses;
- decentralised/isolated decision-making.

Quantification Measures for Quality Benefits

Some benefits are difficult to quantify directly. Their impact may, however, be judged by a number of indicators. These indicators are usually affected by a number of other variables, so the evaluation of the extent to which a benefit has been realised by these indicators is at best a value judgment.

PATIENT SATISFACTION IMPROVED

- reduced waiting time in clinics;
- reduced length of stay in hospital;
- more direct nursing time spent on patient;
- fewer investigations;
- less or more appropriate treatment;
- reduced number of readmissions;
- fewer complaints;
- enhanced range of services/facilities available to patient.

QUALITY OF CARE IMPROVED

- more direct nursing time spent on patient;
- less or more appropriate treatment;
- reduced number of readmissions;
- reduced morbidity/mortality;
- fewer out-patient visits;
- more accurate diagnosis;
- fewer dosage errors;
- fewer inappropriate or duplicate investigations;
- fewer diagnosis errors or uncertainties;
- faster diagnosis and treatment.

STAFF MORALE IMPROVED

- reduced staff turnover;
  increased proportion of junior doctors returning;
- less absenteeism;
- initiation of quality programmes.

OPERATIONAL IMPROVEMENTS

- less training needed;
- faster response to enquiries from the public;
- improved time to react to changes;
- improved communications throughout hospital;
- improved accuracy of information.

Appendix 3: Discounting

Discounting should not be confused with the effects of inflation. It is undertaken to reflect the fact that £1 in one year's time is viewed now as worth less than £1 today. The factor that expresses the precise relationship that makes values at different points in time equivalent is known as the *discount factor*. The discount factor is dependent on the *discount rate* and *time period* ahead being considered.

Algebraically: $D_n = \frac{1}{(1 + r)^n}$

where D_n = discount factor
r = discount rate
n = number of years ahead

Net Present Value

The net present value (NPV) method is the best-recognised discounting technique, in which all future costs and benefits are discounted to their present values. The sum total of the present values is the net present value. Net present values of costs are more correctly described as net present costs (NPC).

The discount rate used for public sector expenditure is set at 6% at the time of writing (March 1994). See table at the end of this appendix for list of discount factors.

Example 1 illustrates the use of discounting to reflect the present value of a future expenditure over four years. Though the net cash flow in both examples is the same (£10.00), the net present value of the cash flows is significantly different (£8.93 compared with £9.47).

Exclusion of Capital Charges and VAT

Discounting is a means of assessing the *economic* consequences of an investment option. NHS capital charges are *financial* charges. They depend either on the means of financing the investment (interest on debt and a return on public dividend capital) or on the method used in Trust accounts to allow for the declining economic value of assets as they age (depreciation). Discounting takes account of the cost of capital reflected in the capital charges through the discount rate that is applied, and calculates economic (rather than accounting) depreciation over the appraisal period. Accordingly, *capital charges should be excluded* from the net present cost calculations.
In economic appraisal of public investment, taxes

Example 1

Option A	**1990/91 Year 0**	**1991/92 Year 1**	**1992/93 Year 2**	**1993/94 Year 3**	**1994/95 Year 4**
Capital	£1.00	£1.00	£1.00	£1.00	£1.00
Revenue	£1.00	£1.00	£1.00	£1.00	£1.00
Total	£2.00	£2.00	£2.00	£2.00	£2.00
Discount Factor	1.0000	0.9434	0.8900	0.8396	0.7921
Present Values	£2.00	£1.89	£1.78	£1.68	£1.58
Sum of Present Values:					
NPV of Costs	£8.93				
Net Costs	£10.00				

Option B	**1990/91 Year 0**	**1991/92 Year 1**	**1992/93 Year 2**	**1993/94 Year 3**	**1994/95 Year 4**
Capital	£5.00				
Revenue	£1.00	£1.00	£1.00	£1.00	£1.00
Total	£6.00	£1.00	£1.00	£1.00	£1.00
Discount Factor	1.0000	0.9434	0.8900	0.8396	0.7921
Present Values	£6.00	£0.94	£0.89	£0.84	£0.79
Sum of Present Values:					
NPV of Costs	£9.47				
Net Costs	£10.00				

Year 0 is defined as the current year. The discount factor for Year 0 (D_0) is always 1.0.

must also be excluded since they are a transfer of money from one point in government to another and not a true cost. Hence *VAT should be subtracted from all costs* included in discounted cash flows used to calculated net present costs. However, in assessing the relative affordability of options, non-recoverable VAT should be taken into account, as it increases the total amount of funds to be raised and consequently may impact on prices passed on to purchasers.

Option A has a spread of capital expenditure over several years; the value today of expenditure incurred in Year 4 is significantly less. Option B has all of the capital expenditure in the current year. The value today of this expenditure is equal to the expenditure, since it is incurred immediately. Therefore the net present value of the costs of Option A is significantly less than that of the costs of Option B.

Discount factors are presented in Table 12.

Assets with Different Lifespans

In options appraisals, discounting is generally required to enable capital and revenue costs to be combined and aggregated in a consistent manner. The appropriate time period over which the discounting should be undertaken is the assumed life of the asset or building. However, if two options have different lifespans, this needs to be reflected in the calculations to enable consistent and valid comparisons to be undertaken.

By annuitizing the discounted cost of the assets over their lifespan and comparing these annual equivalent payments the effects of different lifespans can be accommodated. To compute the equivalent annual cost (EAC) the following steps are required.

1. Set out the phased pattern of capital and revenue payments of the option.
2. Discount the total and sum to calculate the NPV of the option.
3. Apply the appropriate EAC factor to the NPV.

EAC factors are given in Table 12, and can be expressed algebraically as:

$$A_n = \frac{r}{(1 - D_n)}$$

where A_n = equivalent annual cost of £1
r = discount rate
D_n = discount factor
n = number of years ahead

Example 2 illustrates the comparison of two options of unequal length. The annual equivalent cost of Option A is £1.68, Option B £2.12. Thus although the net cash flow of Option A is significantly more than Option B, Option A is preferable on the basis of the EAC.

Example 2

Option A	**1990/91 Year 0**	**1991/92 Year 1**	**1992/93 Year 2**	**1993/94 Year 3**	**1994/95 Year 4**	**1995/96 Year 5**	**1996/97 Year 6**	**1997/98 Year 7**
Capital	£1.00	£1.00	£1.00	£1.00	£1.00			
Revenue	£1.00	£1.00	£1.00	£1.00	£1.00	£1.00	£1.00	£1.00
Total	£2.00	£2.00	£2.00	£2.00	£2.00	£1.00	£1.00	£1.00
Discount Factor	1.0000	0.9434	0.8900	0.8396	0.7921	0.7473	0.7050	0.6651
Present Values	£2.00	£1.89	£1.78	£1.68	£1.58	£0.75	£0.71	£0.67
Net Cash Flow			= £13.00					
Sum of Present values = NPV of Costs			= £11.05					
Annualizing Factor for Years 0-7 at 6%			= 1 + 5.5824					
Equivalent Annual Cost			= £1.68					

Option B	**1990/91 Year 0**	**1991/92 Year 1**	**1992/93 Year 2**	**1993/94 Year 3**	**1994/95 Year 4**
Capital	£5.00				
Revenue	£1.00	£1.00	£1.00	£1.00	£1.00
Total	£6.00	£1.00	£1.00	£1.00	£1.00
Discount Factor	1.0000	0.9434	0.8900	0.8396	0.7921
Present Values	£6.00	£0.94	£0.89	£0.84	£0.79
Net Cash Flow			= £10.00		
Sum of Present Values = NPV of Costs			= £9.47		
Annualizing Factor for Years 0-4 at 6%			= 1 + 3.4651		
Equivalent Annual Cost			= £2.12		

TABLE 12 DISCOUNT FACTORS, EQUIVALENT ANNUAL COSTS, AND PRESENT VALUES OF £1 PER YEAR FOR A DISCOUNT RATE OF 6 PER CENT

Year	Discount Factor	EAC of £1	Present Value of £1 per year	Year	Discount Factor	EAC of £1	Present Value of £1 per year
0	1.0000	N/A	N/A	51	0.0512	0.0632	15.8131
1	0.9434	1.0600	0.9434	52	0.0483	0.0630	15.8614
2	0.8900	0.5454	1.8334	53	0.0456	0.0629	15.9070
3	0.8396	0.3741	2.6730	54	0.0430	0.0627	15.9500
4	0.7921	0.2886	3.4651	55	0.0406	0.0625	15.9905
5	0.7473	0.2374	4.2124	56	0.0383	0.0624	16.0288
6	0.7050	0.2034	4.9173	57	0.0361	0.0622	16.0649
7	0.6651	0.1791	5.5824	58	0.0341	0.0621	16.0990
8	0.6274	0.1610	6.2098	59	0.0321	0.0620	16.1311
9	0.5919	0.1470	6.8017	60	0.0303	0.0619	16.1614
10	0.5584	0.1359	7.3601	61	0.0286	0.0618	16.1900
11	0.5268	0.1268	7.8869	62	0.0270	0.0617	16.2170
12	0.4970	0.1193	8.3838	63	0.0255	0.0616	16.2425
13	0.4688	0.1130	8.8527	64	0.0240	0.0615	16.2665
14	0.4423	0.1076	9.2950	65	0.0227	0.0614	16.2891
15	0.4173	0.1030	9.7122	66	0.0214	0.0613	16.3105
16	0.3936	0.0990	10.1059	67	0.0202	0.0612	16.3307
17	0.3714	0.0954	10.4773	68	0.0190	0.0612	16.3497
18	0.3503	0.0924	10.8276	69	0.0179	0.0611	16.3676
19	0.3305	0.0896	11.1581	70	0.0169	0.0610	16.3845
20	0.3118	0.0872	11.4699	71	0.0160	0.0610	16.4005
21	0.2942	0.0850	11.7641	72	0.0151	0.0609	16.4156
22	0.2775	0.0830	12.0416	73	0.0142	0.0609	16.4298
23	0.2618	0.0813	12.3034	74	0.0134	0.0608	16.4432
24	0.2470	0.0797	12.5504	75	0.0126	0.0608	16.4558
25	0.2330	0.0782	12.7834	76	0.0119	0.0607	16.4678
26	0.2198	0.0769	13.0032	77	0.0113	0.0607	16.4790
27	0.2074	0.0757	13.2105	78	0.0106	0.0606	16.4897
28	0.1956	0.0746	13.4062	79	0.0100	0.0606	16.4997
29	0.1846	0.0736	13.5907	80	0.0095	0.0606	16.5091
30	0.1741	0.0726	13.7648	81	0.0089	0.0605	16.5180
31	0.1643	0.0718	13.9291	82	0.0084	0.0605	16.5265
32	0.1550	0.0710	14.0840	83	0.0079	0.0605	16.5344
33	0.1462	0.0703	14.2302	84	0.0075	0.0605	16.5419
34	0.1379	0.0696	14.3681	85	0.0071	0.0604	16.5489
35	0.1301	0.0690	14.4982	86	0.0067	0.0604	16.5556
36	0.1227	0.0684	14.6210	87	0.0063	0.0604	16.5619
37	0.1158	0.0679	14.7368	88	0.0059	0.0604	16.5678
38	0.1092	0.0674	14.8460	89	0.0056	0.0603	16.5734
39	0.1031	0.0669	14.9491	90	0.0053	0.0603	16.5787
40	0.0972	0.0665	15.0463	91	0.0050	0.0603	16.5837
41	0.0917	0.0661	15.1380	92	0.0047	0.0603	16.5884
42	0.0865	0.0657	15.2245	93	0.0044	0.0603	16.5928
43	0.0816	0.0653	15.3062	94	0.0042	0.0603	16.5970
44	0.0770	0.0650	15.3832	95	0.0039	0.0602	16.6009
45	0.0727	0.0647	15.4558	96	0.0037	0.0602	16.6047
46	0.0685	0.0644	15.5244	97	0.0035	0.0602	16.6082
47	0.0647	0.0641	15.5890	98	0.0033	0.0602	16.6115
48	0.0610	0.0639	15.6500	99	0.0031	0.0602	16.6146
49	0.0575	0.0637	15.7076	100	0.0029	0.0602	16.6175
50	0.0543	0.0634	15.7619				

Appendix 4: The Full Business Case Submission

Structure

Full Business Case submissions must include the following:

- detailed capital investment appraisal;
- scheme description; and
- project management plans:
  (a) project management;
  (b) contract strategy;
  (c) plans for post-project evaluation;
  (d) risk management strategy.

Capital Investment Appraisal

Aim to provide a clear and reasoned presentation of the information and analysis which supports the proposal:

STRATEGIC CONTEXT

- Identify service development priorities and priorities for improving use of resources as reviewed in Strategic Plans.
- Prepare background information on changes in the pattern of services and use of resources (including the estate) required to implement strategy. Highlight improved use of resources.
- Describe and quantify present catchment population, present level of service activity and resources use (including manpower and property).
- Quote relevant performance indicators and describe condition, functional suitability and utilisation of property/information system.
- Describe the market for services, the competitive position of the Trust and of other service providers.
- Justify assessments of future services and functions required by reference to purchasers requirements, projected catchment population and expected demand for services.
- Indicate any special factors influencing need or priority.

OBJECTIVES, CONSTRAINTS AND BENEFIT CRITERIA

- Review performance of existing services and facilities to identify any surplus capacity and particular targets for improving efficiency and effectiveness.
- Define benefit criteria to be used to assess output of options and the achievement of objectives.
- Establish clear objectives for future services in terms of health care outputs and use of resources.
- Identify any key constraints (e.g. timescale, available resources, location) which will affect all options. Avoid unnecessary constraints.
- Objectives and constraints should be defined and, if possible, quantified to assist formulation and evaluation of options.
- Identify any other particular features likely to assist evaluation.

FORMULATION OF OPTIONS

- Identify alternatives for meeting objectives.
- Give clear reasons for early rejection of options.
- Specify options for detailed evaluation by reference to objectives, constraints and benefit criteria.
- Options may or may not involve capital investment.

APPRAISAL OF OPTIONS

- Identify, assess and compare extent and timing of costs and quantifiable financial benefits occurring over the functional life of options including:

  (a) capital and revenue costs including, where appropriate, the value or cost of assets used. The opportunity cost of property (including land) already in NHS ownership, and where appropriate, that of embedded university accommodation, should be included;

  (b) quantifiable financial benefits in the form of income, cost savings in other services, realisable assets etc;

  (c) significant costs and benefits occurring outside the NHS (may be shown separately);

  (d) use discounted values to assist comparisons.

NB: All costs and quantifiable financial benefits should be dated and reported at constant prices at a specified price level.

- Identify and describe all service benefits and outputs over the functional life of options using measured assessments where possible (e.g. average length of stay, throughput of patients). Project likely performance of options.

- Identify and assess locational/siting aspects including accessibility.

- Identify and assess effects on other patient services, other providers and other health care agencies e.g. local authority provision of personal social services, voluntary organisations, etc.

- Explain any other factors which may affect choice including environmental impact (visual impact, traffic generation), manpower implications (recruitment, training and education), timing, etc.

- Test for uncertainty, assess relative importance of particular estimates and assumptions to determine any feasible changes which could overturn the choice of option, and identify trigger values which initiate reappraisal of options.

SELECTION OF THE PREFERRED OPTION

- Summarise and present the results of the investment appraisal to explain the choice of option. Identify likely improvements in patient services and performance.

- Describe main aspects of proposed scheme selected on the basis of the investment appraisal and for which approval is sought.

- Outline scope, give location, main contents, estimated capital costs and estimated annual running costs.

- Include a map or plan showing location of scheme and relationship to existing facilities and other units, and proposals for estate development/rationalisation including any change of use.

- Describe the plan to realise the benefits of the preferred option.

- Where appropriate, summarise the result of local consultations.

Scheme description

A scheme description should be appended to the Full Business Case.

The main aspects of the scheme should be described to indicate impact on services and use of resources, and to provide a discipline for subsequent planning and design development.

CAPITAL COSTS

- Report capital cost, including departmental costs, reasonable on-costs (identifying main elements) and costs of fees and equipment.
- Forecast annual incidence of capital expenditure and confirm that resources will be available within current resource assumptions.

- State the base year prices used to calculate costs, giving index level of pricing.

- State percentage change in capital costs (measured in real terms) needed to trigger a review or lapse of Approval. Trusts should normally expect values to be set within the range +2% to +5%. In any case Approval will lapse if business case capital cost increases in real terms by more than 10%.

RUNNING COSTS

- Report revenue costs (annual running costs based on full year of normal operation). Estimates should reflect staffing (see below) and the known planning/design features.

- State the base year prices used to calculate costs, give index level of pricing where appropriate.

- State net saving or increase on overall revenue budget and confirm that resources will be available within current resource assumptions.

- Identify source of any additional revenue funds required.

- State percentage change in revenue cost (measured in real terms) needed to trigger a review or lapse of Approval. Outposts should normally trigger values to be set within the range of +2% to +5%. In any case Approval will lapse if business case revenue cost increases in real terms by more than 10%.

TIMING

- Outline programme for planning and development, identify target dates for completion of subsequent planning stages and date(s) when services to patients are expected to commence.

STAFFING

- Report existing and estimated future staff complement and set out redeployment/ recruitment implications (staffing costs should be reflected under Running Costs above).

OTHER CONSIDERATIONS

- Report any significant consequences of the scheme that fall outside the NHS (cost or benefit);

- Identify any expected participation of private firms, voluntary organisations, universities, etc in the provision and operation of services.

- A statement showing breakdown and incidence of estimate capital and running costs, reported

on Cost Forms FB1, 2, 3, 4 and 5, should be included as part of the scheme description.

PROJECT MANAGEMENT PLANS

The following management and control plans should be appended to the Full Business Case:

- project management arrangements;
- contract strategy;
- project monitoring and post-project evaluation plans;
- cash-flow projections; and
- risk management strategy.

Appendix 5: Glossary of Terms

Annuitizing Converting a sum of capital to an equivalent series of future annual payments or costs.

Approval in principle A previous approval requirement before funds were committed to a development now superceded.

Average cost The total cost of a project divided by the number of units of output.

Capital costs Expenditure on durable assets.

Concise 4 The computer-based, integrated health building information system used by health authorities to assist in the management and planning of capital schemes.

Cost benefit analysis A method of appraisal which tries to take account of both financial and non-financial attributes of a project and also aims to attach quantitative values to the non-financial attributes.

Cost effectiveness analysis A method of appraisal applied to benefits or costs. It is used to compare the maximum benefits of each project given a level of cost, or identify the project with the lowest costs for a given level of benefits.

Discounted cash flows The revenue and costs of each year of an option, discounted by the respective discount factor. This is to take account of the opportunity costs that arise when the timing of cash flows differ between options.

Discount factor The number that is applied to convert a revenue or cost to a discounted value.

Discount rate The rate at which the present value of money depreciates in real terms, calculated on the basis of the perceived benefits of receiving revenue/resources sooner rather than later.

Economic appraisal A general term used to cover cost benefit analysis, cost effectiveness analysis, investment and option appraisal.

Equivalent annual cost Used to compare the costs of options with a different lifespan. The different lifespans are accommodated by discounting the full cost and showing this as a constant annual sum of money over the lifespan of the investment.

Financial appraisal An analysis of options, confined to the monetary implications of alternatives.

Full Business Case The document prepared by a Trust in accordance with the *Business Case Guide* which develops the previously identified preferred option.

Full life costs The total cost of options. These must include necessary refurbishment, replacement, or maintenance costs that are likely to occur throughout the whole expected life of the option.

IM&T Information Management and Technology. The term covers all aspects of management and use of information, including that based upon paper, computers and telecommunications.

IMG Information Management Group of the NHS Executive. Undertakes planning and support for the development of information systems throughout the NHS.

Investment appraisal The analysis of different options, but confined to considering alternatives involving capital investment.

Investment decision maker Usually the Trust Board. Decides whether to invest financial and human resources in any given project.

Marginal cost The extra cost incurred from producing one more unit of output.

Net present cost The net present value of costs.

Net present value The sum of discounted costs and revenues.

Nucleus A system for hospital planning and design, supported by comprehensive information, including standardised briefing material and planning documentation.

On-costs That part of the capital cost of a building which arises from the interaction of departments within a building and the building with its site.

Opportunity cost The value forgone by not using a resource in the best alternative activity.

Residual values The expected market value or net asset value after depreciation (which ever is the lower) of an investment at the end of its economic life.

Revenue cost An NHS term, applied to expenditure on running or operating costs of a project.

Sunk cost Costs that have already been incurred and irrevocably committed.

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